

More than a sightseeing tour: Felicity Jones describes her experiences on a recent Workers Educational Association study tour of CHINA (page 9)



Adriana Caudrey continues her investigation of the academic underworld where **BOGUS DEGREES** can be bought for as little as £160 – and no questions asked (page 10)

SUPERCOMPUTERS: Jon Turney looks at the prospects of British scientists being given adequate access to the latest generation of the world's most powerful computers following the Forty report (page 11)

DARWIN and divinity: John Durant discusses whether the victory of evolutionary science over received religion was really as complete as has been generally believed (page 13)



Stuart Sutherland reviews *Neuronal Man* by Jean-Pierre Changeux but concludes that the goal of explaining the human MIND in terms of its biology is as distant as ever (page 16)

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An Essay on Education IV

'First-class minds' at bay

British education today seems to be the victim of the unfairness of paradoxes. On the one hand schools are indisputably the focus for popular discontent, inchoate maybe but certainly genuine. The nation's leaders, left, right and centre, argue that schools (and nowadays higher education is often included in the indictment) are failing to develop the talent of young people to its full extent. Parents feel a parallel unease. They invest the highest hopes in the present happiness and future achievement of their children, and if these hopes are frustrated the schools are often blamed.

On the other hand the evidence to explain let alone justify this tangible unease is slight. Since the comprehensive reform of the 1960s Britain has enjoyed a sensible and stable pattern of schools for the ages of five to 16 and beyond. The teaching profession is better qualified, academically and professionally, than ever, and however shaky its collective morale the dedication of the great majority of individual teachers is not in serious doubt. Few British secondary schools, even in the most deprived districts, encounter the overwhelming remedial problems faced by some American high schools. There is almost no evidence that French, German or Japanese pupils are educated according to a more flexible and modern curriculum. By most sensible international indices, British education seems to be performing at an above-average level. One reason for this puzzling paradox is that schools and teachers are alarmed by some of the phenomena described in the first part of this essay – the exclusive and inward culture of the young, the crumbling of parental authority before the remorseless pressure of the peer group, the invasion of individual and family privacy by instant taste and mass communication, and they may be tempted to blame education for their consequences.

But another more penetrating explanation of this paradox is that the values and practice of education are much too close for comfort to our self-image as a society, our evaluation of the British present and assessment of the British future. Schools hold up a mirror to society: if their contemporary reputation is fragile much the most important reason is that we do not like, even understand, what we see in that mirror.

This close relationship between the reputation of our schools and the state of national morale is not difficult to explain. Of all communal activities education touches most closely individual lives and social values. In contrast the regulation and promotion of industry, the social security system, even health and social services have more limited intentions. They are concerned with improving and civilizing our means of living; education is the quality of our lives. Their purpose, like that of nearly all state and collective action, is to promote socio-economic or physical health; the purpose of these practical goals, extends in the secular 20th century to the moral well-being of the individual and of society.

Only a limited amount of information can be discovered about the quality of a nation by examining its employment, industrial, health, foreign policies, but an examination of its education provides a recognizable portrait of its ultimate values. France's inheritance are written on the face of Jeffersonian liberalism, exuberant frontier free enterprise, and patriotic religion is still a commanding presence. In American education, and to Britain 30 years ago a settled national

liberal democracy that had not rejected out-of-hand a more aristocratic past, and abroad an imperial great power. But today?

Another reason is that education is the most future-directed of all the organized activities undertaken by modern societies. Not only does it address ends as well as means and engage individual hopes as well as social and economic ambitions, its territory is the future as much as the present. The values and practice of schools not only add up to a powerful statement about the quality of contemporary society, they are also an equally powerful statement about society's desirable future. What goes on in schools today is as much directed to 21st-century Britain as to the diurnal routine of the 1980s. As the former is even more sharply contested than the latter, because it seems a more open question, it is hardly surprising that schools have become embroiled in intense, occasionally even fundamentalist, controversy.

The impact of education's future direction on its present reputation is hard to assess. Of course in a troubled and ageing society with a shortened time horizon the future seems less enticing – to the young menacing, and to the old, But it can also be argued that the restlessness of modern Britain, its obsession with instant novelty, may put a higher premium on a future-directed activity like education. However, it is just as likely that the frenetic quality of modern life may undermine the capacity of schools to validate a hopeful future. The accelerating accumulation of knowledge, the destabilizing turnover of technology, the apartheid of generations, the collapse of community tradition, the rise of ephemeral consumerism – none of these creates the conditions for that confident reach-forward into the future within the context of an essential moral continuity, such as schools can provide.

Such a fissiparous future may be difficult to contain within the traditions that still govern the character of British education, and also the shape of the picture which we see in the mirror that schools hold up to society. Two dominant traditions can be distinguished. The first is that of liberal education, a package of pedagogy and curricula organized around the principle that the most important task of the individual child to the full within a humanist culture. The second is that of modernizing, science-based education, organized around the principle that the purpose of schooling is to produce a socio-economic man (and woman), competent and effective in our modern age.

The icon prophet of liberal education has always been Matthew Arnold. But the incoherent identification that suggests with a high-minded high Victorian classicism can be misleading. Much of popular education in the last century and the early years of this, including a large slice of the work of the much misunderstood mechanics' institutions, was as deeply liberal in its day as liberal in today's. To-day's liberal values permeate British schools. The emphasis on process rather than accumulation, on the quality of learning rather than the quantity of information, the disapproval of passive spoon-feeding, the invitation to encourage children to think for themselves – all are elements in this liberal project. Most humanities subjects, and some social and pure science, justify themselves in the language of liberal education.

Yet if language has remained deficient in two respects. First, liberal education has failed to incorporate adequately natural science, and dependent technologies. Literature has continued to be the principal channel through which liberal values flow in British education. Of course, some argue, this anti-science, bias is

cannot compete with integrationist disciplines in their potential contribution to the liberal project. But who can claim in the age after Einstein and DNA that physics or biology do not have a profoundly integrationist capacity (although maybe one that is difficult to express at the level of the school curriculum), and who can deny at a time of triumphant professionalization in so many of the humanities that English and history sometimes betray a distressing bias towards reductionism?

But, however unjustified and unnecessary, this weakness remains in our definition of liberal education. Too often science, with the exception of mathematics, is excluded from any serious role in promoting general education in schools. A level chemistry is rarely regarded as a course that can stretch the intellectual imagination. So the natural enthusiasm that science excites among young people in an industrial society has not been recruited into the service of liberal values. Both that particular tradition and the practice of science lose something of their intellectual vitality as a result.

Second, liberal education has remained pre-democratic as well as pre-scientific (and pre-industrial?). Too many people at the top of British society doubt the desirability, or even the possibility, of educating the mass of young people with such liberal intentions. For those who make up that "thin clear stream of excellence" (Lord Ashby's phrase) or with "first-class minds" an education that promotes high-level and generalizable intellectual skills within a settled humanist tradition is entirely appropriate. But is this a reasonable ambition for the mass of pupils? If it is successful, may its effect not be to develop an intellectual autonomy that in an unequal society cannot be matched by a similar personal autonomy and so becomes a source of personal frustration and social discontent (remember Jude)? And if this liberal ambition fails, will it not leave many school-leavers eventually illiterate without offering them any finer compensation?

But maybe the difficulty goes even deeper. The extreme pragmatism of the British intellectual tradition reflects the emphasis placed on an implicit solidarity of manners at the expense of the explicit cohesiveness of ideas and expertise. Initiation into this informal but exclusive society of intellectual manners can easily be confused with the intentions of liberal education, so reducing the latter to a kind of clubbability of "first-class minds."

Some would argue that the failure to develop a sufficiently persuasive model of civic literacy and this cramped definition of a liberal education are both aspects of a broader phenomenon, the incomplete modernization of British society. Two centuries ago Britain was the most modern society in Europe; today it is among the most traditional. Until about 1860 the development of Britain into a liberal society and industrial economy proceeded at a headlong pace but then faltered, maybe because of the counter-attraction of empire, maybe because the middle-class had been incorporated with too slight a struggle into the structure of power and had responded gratefully by uncritical adoption of the semi-aristocratic cult of the gentleman.

The causes are not important in the present argument but the consequences are. The liberal tradition, in association with intellectual conformity and an anti-vocational amateurism, its anachronistic footprints in education in 1985, just 15 years from the start of the 21st century, all Souls man has to compete with the Polytechnic. His intellectual ability of course is as considerable; his professional expertise may be as great, but

his mental priorities belong in the pre-democratic pre-industrial world that is the product of Britain's abject modernization.

So much for the liberal tradition, its importance in any debate about the quality of our national culture should not conceal the fact that its claim to the dominant tradition within British schools is not indisputable. A perfectly good case can be argued that it was the second tradition, that of a modernizing, science-based education, which has animated the movement for educational reform, improvement and expansion since 1870 (and with increased intensity after 1919 and 1945).

Certainly most governments have justified additional public investment in schools in these terms, to produce a scientifically and vocationally literate population, although the complementary justification that enfranchised citizens must be educated up to their responsibilities was influential between 1870 and 1914, and again in the 1940s and 1960s. It is also true that the core sciences like physics, mathematics, chemistry and biology have superseded the classics as the by-disciplines within the secondary school curriculum.

Yet two obstacles have stood in the way of the easy success of this second tradition. The first is the inwardness, scholasticism even, of science. Official has remained imprisoned within a one-dimensional expertise. Generally scientists have been content to remain the loyal servants of society. Despite the popularity of futuristology they have rarely attempted to develop alternative cultural codes to those which they inherited from the pre-scientific past.

The second is that, perhaps because of the uneasy association between science and the older "liberal" disciplines, this modernizing science-based curriculum is always vulnerable to reversion to a Cragford-style utilitarianism for all but the most able pupils. This danger is intensified by the conspiracy of intellectual manners which often substitutes for high ability in Britain and is summed up in the phrase that is both vacuous and pregnant, "first-class minds". In the eyes of a political class that still demands considerable deference from its more numerous fellow citizens such a curriculum can only be accepted if it is reduced to teaching narrow industrial skills or, in these enlightened times, promoting an unthreatening trainability.

These are a few of the fuzzy images that can be glimpsed in the mirror which British education holds up to British society. The strains and inconsistencies which they expose must not be exaggerated; they are minor and benign indeed compared with those of all but a handful of the most fortunate nations (many which, unfortunately, are either near neighbours or economic rivals). What is particularly about the long contemplated "British disease" is not its intensity but its intractability. In a society which since the 18th century has solved its internal dilemmas by crab-wise accommodation and pragmatic consensus, the moral power of ideas has atrophied. So we have no rigorous means by which we can analyse our present dilemmas and propose alternatives. Education is caught in the middle: able to reject those baleful images that distort us but unable, because logic, reason, analysis and its other instruments play such a subordinate part in the making of British culture, to modify those images. As Jane Austen wrote in *Persuasion*: "From politics, it was an easy step to silence." But silence is a less reassuring refuge almost two centuries later.

Peter Scott

• Laurie Taylor will be back next week

The Times Higher Education Supplement

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Better degrees boom as hard work pays off

by Staff Reporters

Students at British universities have attained more "glittering prizes" than ever in this year's finals – basically because they are working harder.

A survey of half the country's universities, conducted by *The THES*, has shown that the proportion of firsts and upper seconds has been rising steadily over the last five years.

Academic administrators attribute the improvement to greater competition for places, resulting in higher-calibre students, and to anxiety about job prospects spurring undergraduates to better performances.

Mr John Wood, academic registrar at the University of East Anglia, said: "Universities are setting higher entry conditions and making fewer concessions over A level grades. Students also seem to be more hard-working and serious minded than they were five or 10 years ago."

At East Anglia this trend has resulted in the proportion of upper seconds going up from 27 per cent in 1983, to 34 per cent in 1984, and to 36 per cent this year. The number of firsts has gone up from 44 to 52 over the last year, but this represents an increase from only 4 per cent to 4.7 per cent.

The rise in the proportion of upper seconds is a more accurate weather vane than that of firsts, which are subject to greater fluctuations.

The most telling conclusions can be drawn by examining the combined increase in the number of firsts and upper seconds. At Cambridge University, for example, the top class degree results combined, accounted for 49.3 per cent of all results. Last

year this figure was 48.4 per cent and in 1981 it was 45.1 per cent.

Twenty-five years ago firsts and upper seconds accounted for only 34.4 per cent of all the Cambridge results. In that year 10.3 per cent of undergraduates scored firsts, as against 12.9 per cent in 1981, 12.8 per cent in 1984 and 13.8 per cent this year. The university has also experienced a proportionate drop in third class degrees. These have fallen from 22.1 per cent in 1960, to 11.5 in 1981, 10.2 in 1984, and 9.3 this year.

Finals results have been improving dramatically at Bath University. The proportion of firsts has almost doubled over the last seven years, from 5.5 per cent to 10.7 per cent. In the same period upper seconds have gone up from 36.3 to 45.3 per cent.

At Lancaster University firsts and seconds combined have steadily risen from 33.1 per cent in 1981, to 41.3 per cent this year. Firsts have gone up over the last four years from 2.6 to 4.3 per cent.

At Keele University the proportion of firsts has also been rising. A senior academic administrator there said: "I've heard it said that there's been greater commitment over the last few years, reflecting the worsening job prospects. I think we're a long way away from the late 1960s, early 1970s attitude, when a young revolutionary said to me: 'This is a fun place, man'."

Better performances are also reported at St Andrews, Heriot-Watt and Stirling.

Only a handful of universities have recorded a decline. These include St David's University College, Lampeter and Sheffield.

Validation experiment postponed

by Karen Gold

The experimental self-validation agreements of Newcastle and Sheffield City polytechnics with the Council for National Academic Awards, due to start next week, have had to be postponed.

The details of the two agreements, to take effect from September 1 and to last a year, were sent to the council's 30 members, drawn from academics, business and industry, for comment on August 2, with the guarantee that if serious concerns were expressed then a special meeting to discuss them would be held.

But with the deadline for replies at the beginning of this week, only four council members have replied, two of them raising issues that may need to be discussed at a meeting to CNAA chief officer, Dr Edwin Kerr.

The deadline for replies has been extended, but there could be no decision even on whether a special meeting of council was needed for at least another fortnight and so the agreement would have to be delayed.

If a special meeting is required, it may delay the agreements beyond the beginning of the autumn term, leaving very little time before the Government is expected to announce its response to the Lindop committee's report on external validation in the public sector.

The agreements leave paper power with the CNAA as its charter requires, but promise a one-year transfer of effective powers to validate and review all degree courses to the institutions' academic boards.



More 'alpha' projects denied funds in research squeeze

by Jon Turney

Science Correspondent

Increased funds for university research grants are making little impact on the chances of success for a grant application rated in the front rank, according to the research councils.

The declining proportion of "alpha" university grants being funded has been a main plank in the council's arguments for a boost to the science budget over the last two years, and the latest figures show little improvement.

But the councils have failed to agree on the form of a study designed to test the uniformity of "alpha" grading, suggested by the Advisory Board for the Research Councils as a way of buttressing its case to Sir Keith Joseph, Secretary of State for Education and Science.



Contrary to the popular belief that polytechnics are infants compared with universities, the Polytechnic of Central London is making plans for a five-week festival to celebrate its 150th anniversary. It was founded by Sir George Cayley, an aerodynamics pioneer who believed in popular science. When it opened in 1835 at its present Regent Street site, it became a centre for demonstrating the wonders of science to an admiring Victorian public, as this illustration shows.

Exam break for Mugabe

by Peter Aspden

Attempts to diplomatically observers, the Prime Minister of Zimbabwe, Mr Robert Mugabe, took a rare and much-needed holiday in Switzerland in the middle of the troubled country's recent election campaign.

What they did not realize was that his trip to Geneva had a more immediate aim – to sit, like thousands of students all over the world, for an external Masters of Science degree in economics from London University.

Mr Mugabe's name duly appeared on this summer's pass list, giving him his fourth degree from London alone. He has already collected Bachelor of Law, Master of Law and Bachelor of Science degrees, in addition to his Bachelor of Education and Bachelor of Administration qualifications from the University of South Africa.

His passion for learning developed during his 10-year spell in prison in Salisbury (now Harare), where he did much of his academic work in the years following UDI.

But the burdens of prime ministerial office have evidently not dulled his appetite. Although he first registered for the Master of Science degree while in detention in the early 1970s, he let the university know in 1978 that he was interested in renewing his registration.

Engineering increase leaves empty places

by John O'Leary

Attempts to boost the number of engineering students at polytechnics and colleges are being scaled down temporarily in response to new evidence that hundreds of places were left unfilled last year.

Institutions were being sent student number targets this week for 1986/87 which reflected information contained in the National Advisory Body's first full survey of the take-up of places. The main change will be a reduction of more than 1,000 in the number of engineering places allocated throughout the country.

Final details of the monitoring exercise will be presented to the NAB committee on Monday. They will show that more than 3,000 engineering places were left vacant after the body's first national plan took effect in 1984/85. And the position is likely to be worse in the coming year since engineering targets were raised to encourage extra recruitment.

Although the NAB is still anxious to increase student numbers in engineering and has proposed increases for those institutions which met last year's targets, it has been forced to cut back the 1986/87 figure. Mr John Bevan, the NAB secretary, said this week: "We are still planning for numbers in excess of the current take-up but it would be

irresponsible to go scattering largesse around the country.

"The monitoring shows we have not done nearly as well as we had hoped in engineering. We have been expecting that to be the case, but it is still disappointing."

However, Mr Bevan stressed the overall aims of the plan had been achieved and recruitment to other subjects showed a substantial shift into science, technology and other vocational subjects had taken place. Science, business studies, mathematics and computing had all met increased targets.

The survey also showed that fears for enrolments to part-time courses – one for the NAB's top priorities – had proved groundless. Part-time enrolments for courses starting in 1984 actually exceeded the national target by some 1,600 students. The shift between the regions, designed to boost numbers in those areas considered to be under-provided, also had the desired effect.

The proposed numbers issued this week included changes in teacher training courses still to be approved by the committee, but took no account of the reductions needed in other programmes as a result. The NAB is still hoping for additional Government money to make such cuts unnecessary.

found a way of setting up a study of consistency of alpha standards.

The ABRC invited the heads of research councils to consider this earlier this year and ideas mooted included sending some trial grant proposals in borderline areas like biology or psychology to more than one council to see if the results were the same.

There are technical difficulties in such a study, and cross-council comparisons are bedevilled by factors affecting volume and value of applications which differ between fields. But there is also a reluctance to examine peer review procedures in this way for fear of finding significant differences which would be to the disadvantage of one of the four councils awarding grants in the natural sciences.

Other councils report a similar poor prospect. The Agricultural and Food Research Council has found the percentage of alphas funded continuing to decline despite a shift of funds towards university grants from its own institutes. And the Natural Environment Research Council is steady at around 40 per cent.

Although the councils face a common problem, they have so far not



Letters to the editor

Hazards of citation analysis

Sir, - David Ellis (*THES*, August 16) is right to remind us of the defects of citation analysis. Those who are anxious, however, about the application of citation analysis to the assessment of academic research should be invited to consider whether the methods presently employed are the best that could be devised.

My view is that they are sufficiently haphazard and uncertain in their effect that anything likely to improve them should be carefully examined. No one suggests that citation analysis can replace traditional procedures; only that citation analysis may usefully supplement them.

I can think of several additional hazards in citation analysis that Ellis has omitted to mention. But all the hazards taken together do not seem to me worse than ill-informed peer review, from which in recent years universities have suffered most grievously and unfairly.

It is a strange phenomenon that many of those who have fared worst under the peer review system still regard it as the best that can be hoped for. They should be encouraged to study Stephen Lock's paper *Peer review weighed in the balance* in the *British Medical Journal* (October 30, 1982). Lock's brief examination of the evidence against the practice of peer review makes very disturbing reading.

Among the most serious criticisms to be directed at peer review is that it is

admirably designed to perpetuate the "Matthew effect", by which researchers who already have much receive more. When funds were plentiful that probably did not matter very much. Now it is an inadequate procedure.

Ellis is quite correct: it would be a sad irony if methods adopted to evaluate research effectiveness served only to undermine good research. That is, however, precisely what is likely to happen if peer review is allowed to operate unchecked.

Yours faithfully,
P. G. PEACOCK,
Librarian,
University of Stirling.

One MA (Cantab) degree under

Sir, - Mr Gied Martin, MA (Cantab) complains (*THES*, August 23) that the practice of an ancient university "selling" the degree of MA.

Perhaps it would help Mr Martin and others disturbed by this practice to relate it to the history of degree.

In the middle ages students attended Oxford and Cambridge at the age of about 14. The BA was awarded at the age of about 16. A levels (or the French "bacc") took four years after that, the candidate took his MA.

In 1870, as part of its reforms, the University of Oxford considered abolishing the BA altogether as obsolete. Mr Martin should note, the Scottish universities had long done so.

He decided, however, to retain it and do so simply because young fellows (ie, what are now postgraduate students) were considered best under the discipline applying to the members while still in their twenties.

Oxford, therefore, effectively decided to award its primary degree of MA in two stages. Cambridge, like College, Dublin, and Durham continued to do the same. The fully-fledged university at that time awarding a BA not followed by an unexpired MA was London.

The Oxbridge system, then it is makes perfect sense in the Oxbridge setting, certain rights and possibly being enjoyed by both resident and non-resident MAs. A degree is essentially a status within a guild and has its primary purpose. It is a privilege to take the trouble to find out to what university the bearer belongs and to salute the degree accordingly.

Yours faithfully,
A. J. BRESFORD, MA (Oxon),
12 Martin House,
Cromwell Road,
Manchester.

SA boycott

Sir, - Your report on the demonstration by 1,500 Witwatersrand students (*THES*, August 16) and the later protest meeting of 2,000 addressed by the vice-chancellor ought surely to give pause to those who maintain the rightness of the Association of University Teachers of South African universities.

As Channel 4 News mentioned the other day, the campuses are among the few places in South Africa where white and black meet on equal terms. Our academic colleagues in South Africa deserve the fullest possible support from academics in this country, and this misguided policy of boycott should be abandoned - indeed, it is widely ignored, and rightly so. There is certainly no boycott of South Africans in this library.

Yours etc
J. G. WATSON,
Librarian,
Institute of Economics and Statistics,
University of Oxford.

Pol Pot's rise

Sir, - When my book *How Pol Pot Came to Power* was published recently, I did not expect someone as well-informed as P. J. Honey to claim that "documentary sources for the book's subject scarcely exist" (*THES*, August 9).

Mr Honey apparently regards the extensive colonial archives on Kampuchea in Paris, Aix-en-Provence and Phnom Penh, collections of US government intelligence reports released under the Freedom of Information Act, and significant numbers of written Khmer-language primary materials, as something other than "documentary sources". Be that as it may, in the book I used all these extensively, certainly as extensively as the personal interviews on which Mr Honey claims I "rely very heavily".

A good illustration is Mr Honey's reproach that I "rely heavily on the Vietnamese." He cites my quotations from Mr Hoang Tung, of which there are two in the book. In the first case, I also quoted corroborating evidence from French intelligence archives and from Khmer (refugee) oral testimony (p96-7).

In the second case, I noted immediately and explicitly that Mr Tung's statement simply represented "one view". I then quoted an opposing view and went on "to assess these claims and counter-claims" (p140-41) by means of a 12-page analysis based entirely on published American and French government documents, as 51 of the 53 footnotes to that section attest (p165-66).

Mr Honey's ingrained scepticism about the authenticity of the political confessions "allegedly [sic] made under torture to the Khmers Rouges" in Phnom Penh's Tuol Sleng prison, is extraordinary.

He may not be aware that Chanthou Boun and I published the first English translations of excerpts from these confessions and from Khmer



Pol Pot - explanation

Rouge confidential documents describing torture of the prisoners from whom they were being extracted (*New Statesman*, May 2).

This prompted a *Washington Post* reporter to show Khmer Rouge leader Ieng Sary (brother-in-law of Pol Pot) copies of our published extracts and translations. Ieng Sary admitted the documents were genuine (*New Statesman*, August 7).

There are approximately 100,000 pages of confessions and other documents which were abandoned by Pol Pot's regime in 1979. So far neither I nor (to my knowledge) the other Western scholars who have worked in these Tuol Sleng archives, have found any proof or evidence suggesting Vietnamese "editing and tampering with" the documents.

Finally, Mr Honey questions whether the subject of *How Pol Pot Came to Power* "should have been tackled at all". This would have been most helpful had he attempted to pinpoint any gaps in our knowledge that might caution agnosticism. I am surprised that Mr Honey's "long informed hint better on the history of Kampuchea."

Yours etc,
KEN KIERNAN,
Monash University,
Clayton Victoria,
Australia.

Common forms Open learning

Sir, - Bob Powell's concern for the problems faced by his students when they apply for teaching posts is well understood by tutors in initial teacher training institutions. May I suggest that local educational authorities consider the introduction of a simplified and common application form for diverse institutions. Present forms offer diversity in design and frequently recast. All this is time consuming and often frustrating. An alternative approach would be to ask for CVs only.

A simple and uniform procedure applying for first appointments but also I suspect assist hard pressed staff in education offices.

Yours sincerely,
R. S. ESKDALE,
School of Education Studies,
Portsmouth Polytechnic.

Letters for publication should arrive by Tuesday morning. They should be as short as possible and written on one side of the paper. The editor reserves the right to cut or amend them if necessary.

Computer first

Sir, - I am writing to correct an unfortunate impression left by your article "Double IT Boost for Southampton" (*THES*, August 9). By combining the announcement of a new building for the electronics and information engineering department with news of an ESPRIT project at Southampton, the reader could be forgiven for thinking that the ESPRIT project involved only Southampton University. In fact, the project team constitutes a remarkable collaboration between several British and French companies and research laboratories together with the electronics and physics departments at Southampton.

Yours sincerely,
ANTHONY HEY,
ESPRIT Project Coordinator,
University of Southampton.

Jobless programme 'is failing on all fronts'

by Maggie Richards

A £2.5 million educational programme for the unemployed is denounced for inadequate funding, unclear priorities and lack of voluntary sector participation, in a report out today.

Initial claims by the Department of Education and Science that the programme would cater for specific target groups, such as women and ethnic minorities, have not been met, the report alleges.

Calling for a new lease of life to be given to the Replan project, which ends in 1987, the report pinpoints 10 ways in which the programme could be improved.

The report by the National Council for Voluntary Organizations is especially critical of the widespread use of statutory bodies to ensure a swift start to the programme.

The direction of the programme and its budget were irrevocably established before the vast majority of voluntary agencies were informed of its existence

and able to make a response.

"There seems to have been very little consultation or liaison prior to the programme's launch with the range of organizations that are involved in adult education and training; particularly those voluntary organizations that have experience of working with and for unemployed people and who have particular experience of servicing the needs of those most distanced from traditional education structures and disadvantaged in the labour market," the report says.

"This initial lack of wide and relevant consultation would seem to have resulted not only in a wealth of experience and knowledge being overlooked but in a programme of delivery which may not correspond to the needs being articulated by those working at a grassroots and local level."

Despite guidelines which emphasized the importance of recognizing the needs of various groups of unemployed adults, the report finds that few

initiatives from the programme have involved women or ethnic minorities and none has been established for the disabled.

It concludes that the aims, objectives and priorities of the Replan programme were not clearly defined at the outset and are in danger of duplicating existing provision.

The report also denounces the programme for being "unrealistically ambitious" in attempting to introduce a nationwide provision on a budget of £2.5 million for three years.

Problems have been accentuated by the sliding-scale nature of funding for the period and the fact that staffing has to be done on a short-term basis.

In the immediate future, the report suggests new, enhanced representation for voluntary sector groups throughout the Replan programme, including new liaison procedures with the programme's field offices.

In the long term, it recommends a substantial increase in funding to

match other Government initiatives with the unemployed, such as the £12 million Voluntary Projects Programme sponsored by the Manpower Services Commission. But initial research should be conducted before funds are committed to projects, it says.

There must also be a review of the financial structures, particularly to overcome the current situation where by only £50,000 remains to fund projects through the last 18 months of the programme.

This tapering approach to funding, and the short-term staffing policy should be abolished, the report says.

It also demands more sharply defined priorities, with positive action to meet the needs of special groups, and concentration on specific problems, such as those facing rural and inner city areas.

Replan: A Response from the Voluntary Sector, published by the National Council for Voluntary Organizations, 26 Bedford Square, London WC1.

FE unions give strike warning

By David Jobbins and Olga Wotjias

College lecturers in England and Wales are being warned by their union leaders that they will have to step up their industrial action if they vote to reject a pay package worth almost 7 per cent in a full year.

Scottish lecturers may also be considering industrial action today if this week's meeting of the Scottish joint negotiating committee fails to produce a breakthrough.

Leaders of the main union in England and Wales, the National Association of Teachers in Further and Higher Education have recommended acceptance of a provisional agreement reached earlier this summer for a 5 per cent increase from April 1, automatic transfer from the top point of the lowest salary scale, and a further 2 per cent from December 1 subject to presentation of a joint report on structural reforms and potential economies.

Branch meetings are being called for the middle of next month. A final decision on the offer will be taken at a national council meeting on September 30.

Lecturers are to be told in a leaflet circulated by the national executive: "As there is no more to be gained by negotiation, if you vote 'no' it must be understood that the only alternative is to step up the industrial action. There is no middle ground - everyone must choose one or the other, agreement or action."

Opponents of the deal will argue that to settle is to undermine the schoolteachers. But the majority on the executive believes that on the contrary it could prove a valuable precedent towards a settlement in the schools.

They also believe that the L1/L2 merger makes the provisional agreement highly attractive. Natfhe and its predecessor, the Association of Teachers in Technical Institutions, have been campaigning for 12 years to achieve it.

If the offer is rejected, the union is to be ballot its members on two-day selective strikes, and other sanctions designed to hamper administrative work in colleges. These may include a ban on processing statistics, completing registers, handling money on the college's or authority's behalf, curriculum development and use of private cars for college business.

If there was no offer in Scotland this week, the executive of the Educational Institute of Scotland further education lecturers' national section was expected to impose a cut in teaching time from a maximum 24 hours a week to 22 from Monday.

A ballot has already shown that staff are prepared to take action if the employers reject their demands. The union wants in-service training and fewer class contact hours.

"They are also seeking restoration of Houghton pay levels and a sum to meet the increase in the cost of living. Unlike lecturers in the rest of the country they have received no formal pay offer this year."

No comment on cost of image-boosting

by Peter Aspden

Universities are to be asked for extra cash by the Committee of Vice Chancellors and Principals to mount a concerted five-year public relations campaign aimed at improving their image to the outside world.

The move follows a recent report by the CVCP's advisory committee on public relations which urged vice chancellors to shun off their donnish reserve and adopt a higher public profile.

It has not yet been decided how much the campaign is likely to cost, but the CVCP chairman, Mr Maurice Shock, believes the issue of the public's perception of universities to be one of the committee's most urgent priorities, to be discussed in detail in its forthcoming residential meeting next month.

He particularly wants universities to concentrate on improving their image locally. "Unfortunately, universities are part of this country's immense media system, in which local elements are comparatively unimportant. You do not find the intense local support for institutions which you find in the US, for example," he said.

"We have a lot of work to do on trying to make a more effective impact, but we have tiny resources. We feel that now is the right time to mount a long-term campaign to see how it works out."

He said the CVCP would be asking universities to make an extra payment to the committee to cover the costs of the exercise, which would last about five years.

A paper published last month by Mr Jocelyn Stevens, rector of the Royal College of Arts, criticized the CVCP's handling of public relations, describing it as "the dog that does not bark."

Plans are underway to develop the committee's role as an intelligence centre, with a well organized and unified public relations strategy. Mr Stevens recommended the introduction of some kind of electronic mailing system to speed up communications between universities.

He also called for the setting up of a team of "media" vice chancellors, who would be available to the press, television and radio to make expert comments on university affairs.

No CVCP officers were available for comment this week to discuss the financial implications of the proposed new public relations campaign.



The long and the short of it: The tallest member of the British basketball team at 6ft 7ins, Vanessa Lillington-Price, of Georgetown University, in the United States, towers over her captain Sadie Edwards, who recently graduated from Brighton Polytechnic.



Dr Kerr: calm discussion

Final bid to save college

Last ditch efforts are being made to force the National Advisory Body to reconsider its decision to remove all remaining teacher training courses from Hertfordshire College of Higher Education, the only college now facing closure.

Local members of the National Association of Teachers in Further and Higher Education will lobby members of the NAB committee as they assemble for next week's crucial meeting. The college's students union and the National Union of Students have also pledged to continue the campaign to save the college.

Hertfordshire County Council has also written again to the NAB arguing that the case for ending teacher training in the county has not been made, and asking for more time to consider the options.

The authority is particularly angry because it feels its proposal for a merger between the college and Hatfield Polytechnic has not been properly assessed. The authority has promised to maintain its current level of public support for the courses and believes the polytechnic is well placed to take on the work.

Mr Donald Fisher, the county education officer, said: "We still feel there is a strong case for retaining these courses even though we recognize it is not viable for the college to continue as an autonomous body. At least our suggestion should be properly explored. So far we have had no response to our proposals."

The NAB board decided last month to reject the transfer of the courses to Hatfield. Mr Fisher said the board had been given a good report by the Inspectorate and the county had already lost three similar colleges

Kerr springs to defend Sir Keith

Critics of the Green Paper on higher education were interpellated in accusation by the Government of philistinism, Dr Edwin Kerr, this year's president of the education section of the British Association, told the conference.

Dr Kerr, chief officer of the Council for National Academic Awards but speaking in a personal capacity, defended Sir Keith Joseph, the Secretary of State for Education and Science, against what he said had been an almost unanimously hostile reception to the Green Paper.

The paper had recognized other purposes for higher education apart from that based on the labour market, he said.

"You can see why the Secretary of State was so upset, when he believed the Green Paper was endorsing all the principles in Robbins," Dr Kerr said.

But the Government's problem was presentation as much as policy, and its mind could be changed during consultation. "Calm discussion I think can change government's attitudes," Dr Kerr said. "But if we are strident in our opposition, we will only provoke stronger statements from the Secretary

Coach wants transatlantic Britons monitored

Close scrutiny should be maintained over the progress of British athletes on sports scholarships at United States universities, according to Loughborough University's chief athletics coach, George Gandy, who is currently in Kobe, Japan, witnessing Great Britain's disastrous start to the 1985 World Student Games.

Of Britain's 84-strong Kobe squad, 17 currently hold places at American universities on the strength of their sporting prowess. But, gymnasium Terry Bartlett apart, by the end of the first week these transatlantic prodigies had done nothing to improve upon Britain's dismal Universiade standing.

Mr Gandy believes that few athletes who win scholarships abroad are of any use to Britain in key competitions because no proper control is exercised over their training once they leave home. "It would be a good idea," he says, "for Britain's athletic hierarchy to give someone the job of keeping a close eye on the demands placed on our student athletes in America."

"Too often," he alleged, "totally inexperienced youngsters are plunged into a hot competitive environment for the purely short-term objective of maximizing the season's points score, which is of little help to Britain's long-term athletic objectives."

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Scotland Yard issues plea for help

Scotland Yard's Fraud Squad is pressing top academics to join the campaign for legislation to halt the traffic in bogus degrees.

The Committee of Vice Chancellors and Principals regards the trade in spurious qualifications as a "running sore" which regularly poses problems. Mr Don Benett, assistant secretary of the CVCP said: "We would look at any proposals for legislation with great interest."

Inspector Bob Moffat, of the Fraud Squad, is now approaching individual vice chancellors in an attempt to enlist their support for the campaign. Inspector Moffat has joined Mr Reg Prentice, a former education secretary and Mr Lyndon Jones, principal of South West London College, in calling on the Government for measures to counter academic fraud.

They have presented the Department of Education and Science with detailed proposals for legislation. These are being studied by Mr David

DES with special responsibility for monitoring bogus degrees.

Inspector Moffat would like the academic community to adopt a higher profile over the issue. "Universities are the places which likely to suffer most from degree mills. It would be nice to see them acting together in this matter, and for them to put their case to the DES."

"Degree mills pose a threat to the reputation of bona fide universities. Some might say that the universities have a responsibility to the students who work so hard to attain their qualifications to ensure that their value is maintained."

Some dubious institutions deliberately chose names which may be confused with bona fide universities and colleges, and thereby feed off their reputation. Inspector Moffat is concerned that if such places are exposed the scandal may rub off on the authentic establishments of similar name. For example, Sussex University has suffered horrendous problems because

of an "unrecognized institution which operates in the same county and with which it is sometimes confused".

But although a number of universities are concerned that the black market in degrees may be undermining their own reputation, they have not tried actively to combat the problem.

Despite this, the CVCP had supported previous campaigns for legislation, dating back to 1959. Mr Bennett said: "At one stage we certainly thought legislation would be a good idea. It would now be a question of seeing exactly what was being put forward this time."

The campaigners want an accreditation system to be introduced, so that independent higher education establishments could be inspected and monitored. Any which did not opt for accreditation or which did not pass muster would not be included on the officially approved list.

Leader, back page.

مكتبة الأصل

In the years I went to everything, I was living high up in James Court at the top of the Royal Mile, from which I had an unrivalled view of the life of the city. Before that, I had taken part in one of the earliest of the Fringe performances, when the Edinburgh Dramatic Society presented *Peer Gynt*. That was before the Fringe got organized and I think it was more fun; there were less groups. The last time I went to an intellectual Fringe play there was an audience of three. But it is the music that makes the festival. Staying in the city a few years ago, I went to a performance of Beethoven's Choral Symphony conducted by Giulini, so brilliantly conducted and performed that its climaxes were almost unbearably moving.

But even if the more tactless denizens of the city turned their backs upon the festival, what it did for an enthusiast in the city was to reveal a dimension that often seems to be missing in the dark cold days of the winter and the Scottish character. That is the capacity for fun and laughter often recorded by visitors in the 15th and 16th centuries and then seemingly lost. If nothing else, the Festival releases the bonds of the Scottish puritan conscience.

Patrick Nuttgens

Yours sincerely,
WILLIAM ISSEL,
Department of History,
San Francisco State University,
California.

DON'S DIARY

FRIDAY

The essence of Don's Diary is that it must be scribbled while people and events are still warm to the touch. Later and strained remembrance not only fades the freshest blooms but induces temptations to redefeat and polish into yet another unread admittance of failure. The roughness of this note reflects not only absence from the trail but the road surfaces of Indiana towards the end of a day devoted, while on the move, to summing up with a friend and American colleague the response of our institutions to anticipated falls in the size of the 18-year-old age cohort and a decline in the purchasing power of that rump. This against a background of our older halls of residence crumbling beneath their ivy and ominous cracks appearing in the walls thrown up during the 1960s expansion.

How, he wonders, can we be worried about student enrolment with only 8 per cent of our age group attending universities when 55 per cent do in the States. The attitude to demographic change varies widely across the States depending in some measure upon the characteristics of the region concerned. The famous fall of New England may this time reach 44 per cent; in Utah there will be a rise apparently of 1 per cent. I speculate as to whether the local social structure of Salt Lake City is leading to more begetting than in 1 Chronicles, chapters 1-9.

THURSDAY

Suffolk, Cambridge, Stratford and London, all in one day. Ontario is more English than England nowadays and is the shortest and quickest route (notwithstanding the higher speed limit) from Upper New York State to the Mid West.

It provides a welcome opportunity to sum up the concentrated fare of the past few days looking at non-academic operations at Cornell - a programme coincidentally arranged at a time when Cornell's president, Frank Rhodes, was busy at work on a Times article on a possible method of privatizing British universities. How well does the fare go down at home?

Certainly the enterprise concept whereby designated operations have to cover costs and contribute to their development come as a refreshing douché to an administrator for many years labouring under the framework of academic self-commitment in areas where professional expertise, if granted free reign, could have produced all and more than the widely non-representative users' committee actually dreamed of asking for - when did the catering officer last tell the professor of Ruritanian studies what to schedule in his seminar list?

Will have a file under C for Cultural Gap the turning over of student debts for collection to the universities' own collecting agency and under P for the Principal of Unripe Time the proposal that we should launch a Liverpool University credit card. \$30,000 each year through trading activities associated with graduation day - that may have possibilities.

WEDNESDAY

With a brief to look at non-academic means of generating income two and a half days at Cornell seemed adequate. The programme my hosts had constructed seemed reasonable. Little did I know. University shops with a turnover of \$5 million per annum make our operation look like a school lunch-shop; bus services which make a profit in connecting halls with the campus and distant car parks have an obvious appeal to a number of UK institutions - but what about the North American University such an arrangement?

Alumni Associations are a must but I wonder what the strength of commitment to them is beyond lip-

service, a telephone and a part-time administrator at many UK institutions? The successful alumni operation begins before the freshman arrives with arrangements for the first day class photograph and continues through the production of class year books and alumni hosted functions throughout the undergraduate and postgraduate career, while behind the scenes the profile is built up of possible loyalties to halls of residence, a sporting activity or student society. I was duly impressed, as I was meant to be, at the randomly selected entry describing the alumnus contributing under 17 programmes and equally depressed at the intelligence that a number of the alumni operations set up at newer institutions on the traditional model were heavily in debt.

TUESDAY

Up betimes with heeswaxed eyes and away from Manchester on the early shuttle. Travel books advise one to take it easy before long flights if jet lag is to be minimal, travel book writers obviously have a more leisureed life style than travel book readers. Last night's plan was for a family dinner before dad's departure into the wide blue yonder. Last minute shop minding operations meant that date was kept only by the kindness of a colleague who waited late to do some high speed ferrying - and even then the air of relaxation had to be suspended on return at 11 pm to clear the last minute problem.

Figuratively today though the exhilaration of the Airlines Grand Slam made the grey clouds blue. Thanks to the effectiveness of the much maligned BA and Empire Airways (surely the most idiosyncratically named US airline?) connections at Heathrow and Kennedy were safely made with only an hour to spare. Is 35 minutes the world record for an Englishman to clear customs and immigration?

SATURDAY

Milwaukee and the conference brings an end to retrospection and a welter of discussion on planning for the 1990s and diminishing budgets as well as more prosaically important matters such as the anatomy of time expired residences and introduction of new computer programs for catering which to everything including cooking the food. Dr Who is debunked. If life is developing elsewhere in the universe it must surely be along the same lines as on earth since with no prior consultation it is clear that the tensions between halls managers and their university building services are the same in Manchester as in Milwaukee and perceptions of their university's computer laboratory the same in Liverpool and Lafayette.

The strong feeling of mutual co-operation and support is in stident contrast to the competition for students between adjacent institutions in urban areas which has now graduated to television advertising, tube cards, and neon signs on prime downtown advertising sites.

SUNDAY

And we are two days short on the week. Reflection of how much an administrator has to pack in relative to his academic colleagues? - or are realistic time allotted to research? This stands on either train of thought - in the United States the National Association of Colleges and Universities Business Officers is attracting substantial research grants in its own right the benefits of which are available to all subscribing members.

The CUA has produced excellent papers for (excluding the devotion of its workers) minimal resource inputs. Should the generation of grants to support a research unit become a target for its executive? Under present resources no registrar can research all the avenues he would choose and some future national strategy without either political constraint or the remarkable concussions to which the CVC has to adhere in the interest of balance: can only chances are perhaps somewhat high that those of another post-Jarrett potential - the US style institution, once a rare bird but now a thriving species where the dominant genus is the development or business officer, without whose success the academic colleague is unable to operate.

Shane Guy

The author is administrative secretary at the University of Liverpool

OU students fight fees rise

by Maggie Richards

A bitter struggle is looming between the Open University and its 70,000-strong students' association over a decision to take fees for next year over the critical £150 barrier.

Student leaders are particularly incensed that the university, in a submission to its visiting committee earlier this year, suggested fees should rise only by the rate of inflation, plus a small additional sum.

The university's intention is to increase fees from the present £141 for a full-credit course, to between £152 and £156 next year - more than double the current estimated rate of inflation for

the period. The issue has already led to stormy exchanges at a recent meeting of the OU Council with student representative Ms Pam McKay accusing the university of going back on its statement to the visiting committee, which reports directly to the Department of Education and Science.

She also condemned the university's decision to set a variable fee increase, arguing that the DES was bound to opt for charging fees at the highest level. Mrs Iris Price, OUSA's president, is adamant that fee increases above the £150 ceiling would cause real hardship for many OU students.

"Many now are only just able to study with the university," she says. "An extra £2 to £4 above the £150 may seem a small amount, but it is viewed in terms of the full-time student's income."

Taking into account the extra costs of colour television, video, cassette player and a personal computer, the total cost of study might amount to £200. Price added.

Student leaders will meet in due course to discuss what action might be taken. Among options under consideration is the possible withholding of support from the new fees.

Short-term solutions slammed

by Peter Aspdin

Social scientists can make a vital contribution to the solution of some of the world's greatest problems - but their work is seriously underestimated by the Government, says Dr David Ingram, vice chancellor of Kent University.

Many of the world's greatest afflictions, relating to famine, hygienic water supply and health, do not require further scientific research, but better understanding of the methods of organization and distribution. Dr Ingram, who is a physicist, said:

"The needs of most of the world today are not for better means of production, but better means of distribution and marketing. Specialists in these areas of the social sciences are therefore required worldwide, just as much as scientists and engineers."

"We must also face the fact that the main problems of the future are likely to be associated more with the service type of industry rather than the manufacturing. In such industries of the future, the skills of the social scientists will be needed just as much, if not more than those of the scientists."

Dr Ingram, in his response to the Government's Green Paper on higher education, said the opportunity to plan positively for the long-term future of higher education in this country had been sacrificed for short-term financial savings.

"Such policies stand in stark contrast to those being adopted by other Western countries where much higher percentages of the 18-year-old age group are now going on to institutions of higher education and will be providing the skill and experience for the competitive world of 20 years' time."

Dr Ingram's statement was prepared in conjunction with the university council, which met to discuss the Green Paper. Concern was expressed at suggestions that student financial support might be reduced in the future.

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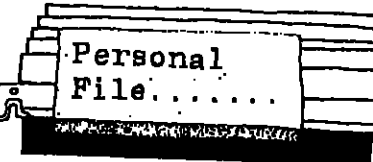
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Falcon who is neither hawk nor dove



by Karen Gold

David Falcon will do six months for the Inner London Education Authority when he takes up his post as deputy director responsible for ILERA's further and higher education on October 1. After that he may be working for the Secretary of State for Education and Science.

Local authority officers in political backwaters may find the idea of one highly politicized set of masters more than enough. Mr Falcon appears to be taking the prospect of two in his stride.

Not that he will be officially employed by the DES. But in April, at the same time as the abolition of the Greater London Council and other metropolitan authorities, rate-capped ILERA comes under the Secretary of State's control and no one knows how extensively he will exercise it.

A witty official commented that the ILERA deputy's job would be more powerful than it might seem: a clever officer, far from being overwhelmed by warring masters, could hold the balance of power in compromise.

David Falcon will have none of that: "I am employed by ILERA and see myself as being very much an answerable to ILERA politicians. I am not planning to go in as a powerbroker," he said.

Mr Falcon is a guarded, diplomatic 39-year-old with a reputation for getting things done. He is not a particularly political appointee - he may have a "Clausen" fan against the Beumb" poster in his kitchen, but it is likely to be there as much for humour as the sentiments.

But he is also an outsider to local government. Before he went to Humberdale as assistant director re-



sponsible for 16 to 19-year-olds (entering a tier higher in outsiders usually enter administration), he was an academic: he went on operational research at Lancaster University; taught statistics at operational research at Leeds for two years and educational management at Sheffield Poly for another two.

He went into education administration because he saw he needed experience in order to teach. He says: "I am going back into education because I need it."

Despite that experience of education, he is more of a social science man. He oversaw the reorganization in Humberdale of the simultaneous merger and reshaping of Humberdale College and was then responsible for the county's building programme in schools reorganization. ILERA, with going tertiary, will find that to 19 experience useful.

Challenges which face him this autumn include the polytechnics of North London and Central London, the new Institute of merged colleges and, after April, the election of ILERA members on an educational platform for the first time. He says he is looking forward to it.

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Karen Gold and Jon Turney report from the British Association conference at Strathclyde

Backing for science 'the cost of a postage stamp'

Britain's annual homage to progress in science and technology this year took 2,000 delegates to Glasgow for the 17th meeting of the British Association for the Advancement of Science.

The BA is an anachronism, a general scientific meeting in an age of specialists, sustained by a serial symposium with a different host university each year. The advantage for the time - it was Strathclyde's turn this time - is a burst of publicity from the Fleet Street horde who go to the meetings because their predecessors have done so for a century and a half. But the balance of advantage probably lies with the association.

A university generally comes with the right sort of city for the meeting; large enough to be comfortable, small enough to be grateful. And it means the presidential address which launches the proceedings can be started with the award of an honorary degree.

This solemn ritual this year took place in Glasgow city hall. Subversive doubts whether Sir Hans Kornberg, a presidential address, controversial by BA standards, outlining the plight of British basic research in the face of government stinginess. Did we realize that state support for science only amounted to the cost of one first class



Professor Sir Hans Kornberg

splendour of the surroundings. Glasgow may be a bit light on industry in the 1980s, but it still boasts some imposing Victorian architecture.

Sir Hans then offered his audience a presidential address, controversial by BA standards, outlining the plight of British basic research in the face of government stinginess. Did we realize that state support for science only amounted to the cost of one first class

stamp a week for each person in the country? He did not say how many days it took to deliver the results.

Professor Kornberg, a militant moderate, unexpectedly finished by arguing against a boost for government spending to return scientists to the days when they never had it so good. The former abundance of government cash had helped foster our perennial failure to apply the results of new research, in his view. It would be better to look instead to industry to make up the current deficit in laboratory loot.

For its part, industry, in the person of Dr Peter King, of the Society of the Chemical Industry, was against those who hamper the advancement of science. He attacked the "apocalypticism" whom he typed as earnest, distinctly puritanical and opposed to the free market. Worse, their attacks on the good works of chemical companies were sometimes aided by a fifth column of scientists who ought to know better.

This insidious breed were a serious source of opposition to the honest practice of chemistry, he alleged. "Nervousness in the absence of tenure,



Professor Sir George Porter

the desire to get a research grant extended, or the pursuit of government funding can lead them to make exaggerated statements which are grist to the mill of sensation-seeking journalists." The worst offenders were "descriptive biologists unfamiliar with the rigour of the physical sciences".

Few BA papers are so combative. But delegates this year heard several hundred more, covering a menu from

the origins of the universe to the source of acid rain. The typical BA member appears to be a science teacher with amateur interests in botany, geology and cosmology. Working scientists stay away, unless they are speaking, but there are plenty of "British Association Young Scientists". These are not scientists in the same sense as Young Liberals are Liberals but enthusiasts for science. When they grow up to be real scientists, they will go to specialist conferences instead.

They may return in the next century if they achieve enough eminence to hit the honorary degree circuit. The current target is set by Professor Sir George Porter, who succeeds Sir Hans Kornberg as BA president. Sir George is the living proof that British science is a small world, becoming simultaneously president of the BA and the Royal Society, and remaining director of the Royal Institution for a few more weeks. Sir George is even ahead of Professor Kornberg in the honorary degree stakes, with well over 20 at his last count. No doubt he will accept another at Bristol University in 1986 with equally practiced good grace. For the BA, a good ritual is worth 1,000 words.

Bending the gender assumptions in science

Are women unfit for science or is science unfit for women? The debate on why men predominate in science - something of a growth? Industry in the wake of last year's "Women into Science and Engineering" campaign - is tending toward the latter view, judging by three days of wide-ranging discussion in the general section of the BA meeting.

Section X has the job of choosing a topical subject for discussion each year and women and science was this year's candidate.

The result suggested that feminist commentators now see the barriers to women entering science less in terms of career or family structures or question of cognitive styles - "going for the jugular or taking the organ as a whole", according to Dr Helen Weinreich-Haste.

According to Professor Evelyn Fox Keller, science is constructed on the assumption that the natural subject is female, and the scientist male, so "any scientist who happens to be a woman is confronted with a contradiction in terms".

This may be why Dr Glynn Breakwell of Surrey University found women less convinced of the benefits of new technology than men, in a survey of university students. The contradiction appeared in her additional finding that women were just as keen to be trained in new technology as men.

She suggested: "The female engineer must have a strange mixture of beliefs to maintain: dubious of the benefits of new technology, but convinced of the importance of gaining training in it."

Ms Peggy Newton, reporting results from a psychological study of female technician trainees for the Engineering Industry Training Board, said there was evidence that women engineers were more androgynous. They had a strong mix of female and male characteristics, according to the opener of a day-long, highly critical discussion of the New Right.

The New Right are in fact traditional conservatives - or neo-Liberals, according to Professor Robert Moore, professor of sociology at Aberdeen University. The two strands are antagonistic: the neo-Liberal free-market ideology contradicts Conservative authoritarianism.

But there are areas of pragmatic agreement between them: the necessity of inequality, a strong State and opposition to what they perceive as a new class, exemplified by social workers.

The American New Right belongs to a social scientific tradition and hardly uses the language of instinct and intuition. The British New Right does



"DON'T TELL ME - YOU'RE A THIRD YEAR ENGINEER."

numbers of men and women was not very compelling.

But Dr Linda Birke, a biologist from the Open University, was one of several who argued that if there came to be more women in science, the world would look different in consequence.

"If we had a different kind of science, one which emphasized respect for and cooperation with nature, then more girls or women might be drawn into it," she said.

Professor Keller went one step further, proposing a science which tried to transcend all two-valued classifications, including gender. But she also said that at present women have more incentive to develop such a way of thinking than men.

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How vulgar tactics are spoiling a promising field

Both political critics and enthusiastic vulgarizers of sociobiology have distorted the claims of a promising field of inquiry, according to Mr Ian Vine of Bradford University.

Far from lending itself naturally to the view that capitalism stems from our genes, sociobiology is perfectly compatible with a critical view of our society, he argued to the BA's psychology section. "This has been willfully obscured by ideological critics of the subject 'who have readily aided the popularizers in promoting a highly misleading image of what human sociobiology can and does claim'."

It was true some sociobiologists had made wild, ill-informed, speculative and over-precise claims about biological constraints on human social behaviour, especially the Harvard entomologist Professor Edward Wilson, who saw himself as "high priest of a new scientific religion, as well as making revolutionary biology the major explanatory key to every topic within the human sciences and humanities."

But Wilson's critics were equally guilty of misrepresentation, and

tended to reject all biological limits to human nature. Since sociobiological theories did not involve any radical departure from orthodox Darwinism, this meant rejecting the basis of evolutionary theory as we know it, Mr Vine argued.

He preferred to explore how sociobiological ideas could be used to understand our current society, with a view to changing it. Otherwise, "to deny the reality of human nature, because of the sins of vulgar sociobiologists, is to give the public a dangerous impression that their scientists have embarrassing facts to hide. And that can only subvert the emancipatory potential of the human sciences."

Mr Vine believed sociobiology could make a modest contribution to the self-knowledge needed for moral and political progress. "If it only serves to show how easily we can be manipulated and exploited, once we have been induced to mistake the interests of the powerful for either our own self-interest or the interests of humanity at large, such knowledge is worth having," he said.

Increased threat to biomedics

Restrictions on test tube baby research threaten to make criminals out of respectable scientists, Professor Allen Templeton of the University of Aberdeen told the BA's biomedical section.

He said that even if Mr Enoch Powell's Unborn Children Protection Bill was overtaken by better legislation, much damage had already been done. Grant-givers and ethical committees would be worried, threatening the most promising developments in human reproductive research - "a disaster for medical research in this country," he said.

Dr Bernadette Modell, lecturer in perinatal medicine at University College London, was convinced that advances in DNA technology would soon make prenatal testing possible for a wide range of genetic diseases.

Professor Templeton, of Aberdeen's department of obstetrics and gynaecology, urged that research on embryos be permitted to improve the success rate of in vitro fertilization treatment. Beyond that, he foresaw major advances in understanding of congenital abnormalities like Down's Syndrome and Spina Bifida.

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Talking to mainstream parents

There is nothing more depressing than chairs being suddenly emptied at a conference before you get up to speak. That used to be the case at the TUC when the specialist debates started, and education frequently fell into that unfortunate category. Hardened trade unionists were all in favour of worthy causes, like health and safety and education: you didn't need bums on seats to prove it. Not so now. Library books in primary schools, the Youth Training Scheme, changes in examinations, research and development, higher education opportunities, all have now become matters of keen interest to TUC delegates.

When my union joined the TUC 10 years ago that process of greater involvement had already started. The decision to join was overwhelming. Members who had previously seen the TUC as dangerous and alien came to realize it could be used as a forum for establishing wider support for Association of University Teachers policies.

The TUC represents mainstream mums and dads who are also trade unionists. Its debates now reflect their much broader concern about the employment and training, and the prospect of a civilized future for their families and those of their workmates. The debates on higher education are no longer left to the "academic boffins". Speakers from engineering, mining, transport, textiles, shopworkers, are likely to be found at the rostrum and they won't be speaking to an empty hall. There is no doubt that TUC interest and union support for higher education has increased substantially as the issues have become better understood. The AUT can take some pride, as indeed can the National Association of Teachers in Further and Higher Education, in the positive role it has played in generating that wider interest and concern.

We have put a lot of effort into convincing other unions that the privileged ivory tower image of academics bears no relation to reality. Few trade union representatives would now argue that universities have been insulated from the current harsh economic climate. That is only the start of a much longer process. At next week's Congress in Blackpool we will have to do more than convince delegates that our universities are one of Britain's success stories. With a Secretary of State who sees higher education expenditure as a drain on the economy, not an investment, we need more than loud protestations against it.

The Trades Union Congress marks the start of a campaign which will be continued through all political party conferences, the British Association and the Confederation of British Industry. But it is grass root support that will count in the end. Government policies will change if people show they are prepared to vote with their feet. Most of all we want individual trade unionists to assert the value of higher education through local MPs, trades councils, local party branches, professional associations, community organizations and the like. That's what we will be working for beyond next week's Congress in a unique campaign joining all campus and higher education union members. I am confident that TUC delegates will see the importance for future prosperity of investing in higher education. I suspect there will be few empty seats in the hall.

Diana Warwick

The author is general secretary of the Association of University Teachers.

Business 'to fund research'

by Karen Gold

Kent business executives and academics have set up an agency to fund business sponsorship for social science research.

The agency, Canterbury Academic Research Associates (CARA), is planned eventually to expand to all disciplines. It was proposed by business executives to Kent University social anthropology lecturer Dr Roy Ellen. The idea is to match academics seeking funding with companies seeking a service. If CARA succeeds it receives commission on the deal.

The agency hopes to bring together a list of academic consultants and a network of contacts in industry and commerce. They aim to find funding not only for conventional research projects but also for exhibitions, museums, films, courses, lectures, fellowships and studentships, and equipment and resources for higher education.

Contracts 'threaten job rights'

by Adriana Caudrey

Lecturers at North East Wales Institute of Higher Education on short-term contracts are being forced to sign away their employment protection rights if they want a job to come back to next term.

The National Association of Teachers in Further and Higher Education says the move is scandalous and local officials want Professor Glyn Phillips, the principal, to cancel the new waiver clause.

The fresh terms, which have been sent to at least 10 lecturers remove their right to make a complaint of unfair dismissal.

Dr Anthony Walker, Nafhe's coordinating committee secretary for the institute, said: "I am concerned about people who are in effect being blackmailed into signing away rights they might have built up, or not doing so and losing their job."

He said many of the staff on renewable contracts had been at the institute for at least five years and had therefore accumulated employment protection rights, which the new clause would negate.

As a temporary measure, Nafhe officials, with assistance from legal advisers, have inserted an additional clause into the contracts of those lecturers who have approached them for help. This paragraph accepts the new conditions but stipulates that staff should not forfeit the protection rights they have already earned.

Mr Jim Mumery, Nafhe's assistant secretary for conditions of service, said: "In our view there is never any justification for using waiver clauses."

Medical libraries face crisis despite cuts

Edinburgh University's medical libraries are facing a funding crisis which could seriously hamper medical research.

The medical libraries committee has already drawn up a list of journals to be axed, with 70 of the current 880 titles to be cancelled in the coming session. But despite these cuts, the libraries are still short of £50,000 of planned spending for next year.

The problems stem both from the increasing costs of publications and from National Health Service cuts.

The libraries serve the teaching hospitals and are used not only by university students but by NHS staff and Medical Research Council and other research units in Edinburgh.

Northern Ireland cash plea for unit

Efforts are being made to persuade Northern Ireland's Department of Education to approve expansion of the province's pioneering educational guidance service for adults.

Adult educators in Northern Ireland are concerned that the service, the first to be established in the United Kingdom 18 years ago, is under increasing pressure as demands on its services grow.

Their concern comes at a time when attention has been focused on the area by the Department of Education and Science's Unit for the Development of Adult Continuing Education in

ment and resources for higher education.

It is not meant to deal with applied research, according to Dr Ellen, but with projects that research councils or trusts would have funded in earlier financial years.

CARA has taken on its first five projects, and is currently negotiating funding for them. The projects need between £3,000 and £70,000 and include an anthropological film and several computer-based projects including a computerized photo-archive.

Academics can submit research proposals or other academic projects to CARA, which undertakes to assess them, advise on redrafting and attempt to find sponsors in commerce and industry to finance them.

The agency's promotional material - all paid for by local business - emphasizes its ideological origins:

"CARA is founded on the conviction that non-governmental and non-charitable sources of finance are available, but that in the past academics have understandably lacked the access, persistence and means of presentation needed to locate and secure it," it says.

"Although sponsors may lay down conditions (though we anticipate these will often be minimal) we see it as our role to encourage research of the highest standard and ethical integrity, and to maintain the normal research environment."

CARA's performance cannot be judged until at least the end of the year, said Dr Ellen.

"I am not completely convinced, but I am not going to look a gift horse in the mouth. So if people say we have got some money to get this off the ground, then I am inclined to go along with them," he said.

Concern as hall fees rise

by David Jobbins

Signs of steep rises in charges for university and college accommodation next year are worrying student leaders.

According to the National Union of Students, some institutions have decided on increases several times the 1985/86 grant increase of 3 per cent.

NUS vice president, welfare, Mr Vicky Phillips, said this week: "Both in the university and public sectors the trend is very worrying. After a couple of years of medium rent rises we are getting word of them going up substantially across the board."

Rent strikes are already at an advanced stage of planning at a number of institutions, mainly within the University of Wales, but also in the public sector led by Sheffield Polytechnic.

Top of the list of rises notified to NUS is Bath University with 9.4 per cent, followed by a proposed 8 per cent at University College, Cardiff, 7.5 per cent at Sheffield University, and a proposed 7 per cent at the University of East Anglia.

Students at Hull, Liverpool and Keele universities face rises of up to 10 per cent or more, while Birmingham University and Rolle College of Higher Education are reported to have fixed an increase of 6 per cent, with 7 per cent planned at City University.

Although the NUS data is incomplete, the union believes it is sufficient to protest at what it regards as a further squeeze on already inadequate student income.

NUS has been pressing institutions and education authorities to resist increases to the grants rise, but with a few notable exceptions such as the Inner London Education Authority, Luton college of higher education, Surrey and Essex universities, there is little evidence that this has been effective this year.

The Committee of Vice Chancellors and Principals shares NUS fears over the decreasing value of the maintenance grant but is not in a position to cushion institutions from the financial pressure for economic half fees.

The withdrawal follows an outcry among students and teachers, many of whom submitted petitions to the federal education ministry urging the withdrawal of this stipulation. The UGC has now set up a committee which will examine the issue and submit a fresh proposal that will take into account the petitioners' complaints.

The problem arose from the difficulty of large numbers of students appear to have had in securing admission to a master's degree even though they had put in 15 years of academic study prior to graduation. Since not all states in the country have switched over to the three-tier formal education system, popularly known as 10+2+3, a two-year degree course remains available in some universities. Graduates from these were especially hard-hit by the UGC directive.

Universities also complained that the UGC provision for a bridge course

for those MA aspirants who had only done a two-year BA degree course would have entailed more funds, teachers and facilities which they had not the resources to provide at such short notice.

A national commission on college teachers has made recommendations designed to improve their living and working conditions. It has suggested giving teachers loans to buy their own means of transport, a medical allowance of 50 rupees (a little over £3) per month, but with a provision for paying full costs in cases of hospitalization.

It has also recommended that a quarter of appointments in any state should be from outside the state. However, entry into college teaching should be based purely on merit established in an all-India test. It proposes that teachers should be given brief refresher courses every five years.

On pay-scales, it has suggested a system of clearly demarcated grades for lecturers, readers and professors, with routine evaluation of performance after eight years before entry into the next grade. Through this method, it says, even a teacher of average ability will be able to earn as much as 75 per cent of the highest salary payable in the profession.

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Sweden faces jobs crisis

from Donald Fields

HELSINKI

As allegations become more frequent of "impoverishment" among Swedish students, fresh doubts have set in about their ability to command a steady job after graduation.

Despite the success of the Social Democratic government elected in 1982 in pegging total unemployment at 3.2 per cent, official figures released this month show that rates in many occupations favoured by graduates are well above this level - and rising.

Unemployment funds covering "academics" - extending more or less to everybody with a tertiary education and engaged in the public sector - recorded a 44 per cent increase in days its members spent without a job in the first half of 1985 compared with the corresponding period last year.

Among groups worst hit are librarians, teachers and social workers, all of whom have spent years acquiring a diploma or degree.

The trend reflects cutbacks in public spending as part of the target of eliminating huge deficits in the central government budget. It has been partly

echoed in private services attracting large numbers of graduates, such as trade and banking.

By contrast, claims for unemployment benefit have been dwindling in private industry, which was allowed to languish after the mid 1970s but has recently been enjoying an export-led revival resulting from a marked change of economic strategy. Though they cannot be extrapolated from the statistics, it can be assumed that the graduates for which most demand is expected - engineers and economists - are not being hit as much as sociologists and humanists.

Cynics might argue that present trends, if sustained, will combine with the perceived inadequacy of student funds to bring about a better balance between university intake and the demands of the labour market.

Certainly the claim that public financial support for students has plummeted to levels prevailing in the 1950s can be expected to make budding matriculants think twice before embarking on an exacting degree course. Their reluctance may be in inverse proportion to the disposable income of their respective households.

Observing the strains thus imposed

Protests force withdrawal of new Indian MA rules

From A. S. Abraham

BOMBAY

The University Grants Commission has hastily withdrawn a circular it had only recently released requiring students all over the country to complete a three-year BA degree course before being eligible for admission to the MA course.

The withdrawal follows an outcry among students and teachers, many of whom submitted petitions to the federal education ministry urging the withdrawal of this stipulation. The UGC has now set up a committee which will examine the issue and submit a fresh proposal that will take into account the petitioners' complaints.

The problem arose from the difficulty of large numbers of students appear to have had in securing admission to a master's degree even though they had put in 15 years of academic study prior to graduation. Since not all states in the country have switched over to the three-tier formal education system, popularly known as 10+2+3, a two-year degree course remains available in some universities. Graduates from these were especially hard-hit by the UGC directive.

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overseas news



Grisly tales from the top bodysnatcher

from William Norris

WASHINGTON

Bill Bass, Professor of the Year elect for the United States, knows where the bodies are buried. He should do he put them there. And every six months he digs them up to see how they are getting on.

It is this unusual occupation for America's leading academic, it is no more so than the man himself. William Marvin Bass III, head of the anthropology department on the Knoxville campus of the University of Tennessee, spends as much of his time with students at the sites of grisly crimes as he does in the classroom and laboratory.

We met over breakfast in a Washington hotel. His breakfast, not mine. I had, thank goodness, eaten some time before - for Bill Bass has a fondness for gruesome stories guaranteed to turn a tender stomach, and he tells them with relish. This kindly, bespectacled 56-year-old with a grizzled crew cut, looking less like Boris Karloff than one's favourite uncle, is a ghoul's ghoul. For him, the stuff of death is the stuff of life.

Professor Bass will be invested with his title in October - an occasion he will celebrate by lecturing at the Smithsonian Institution on the location of cremated remains during the investigation of fires. He was selected by the Council for Advancement and Support of Education from 256 nominees, after an exhaustive process of elimination, for his dedication to excellence and the personal attention he gives to his students.

The honour was unexpected, but it sits easily on him in a slightly bemused fashion. He supposes that he will be giving a few more talks on his favourite subject, though since he already lectures outside the classroom about a hundred times a year - always accompanied by the bag of human bones which is his trademark - there is not much room for an increase. As for the \$5,000 award which goes with the title, he intends to use it for a down-payment on a new motorized caravan. Camping is his hobby, and his old one has seen better days.

Bill Bass has been at Tennessee since 1971, having previously taught at the universities of Kansas, Nebraska, and Pennsylvania. He graduated from the University of Virginia, gained his master's degree in Kentucky and his doctorate in Pennsylvania, and wherever he has gone there has been a trail of identified bodies and solved crimes. "They call me," he says, "whenever they find something too far gone for an autopsy. Or sometimes when it is just too smelly."

He admits to a poor sense of smell, and the scent of corruption on his clothes, even after dry-cleaning, has been known to banish students from the first six rows of the classroom. Nevertheless, he is never short of volunteers to accompany him to the scene of the crime, believing that there is no substitute for practical experience.

"To be a good teacher, you have to do research. If you do good research, you have to share it with students. I do the public service work to help students learn, and because that's

one way we can pay back society for letting us be anthropology majors."

Not that crime is always involved. Bass recalls being summoned to a disturbed grave in a Tennessee garden, where he found the decomposed body of a young man whom he estimated had been dead for about a year. "It would have been an ideal place to put a murder victim," he said. The police began searching their files for any white males, aged 24 to 28, who had gone missing in the last 12 months.

"When we got the bones back to the lab," Bass said, "I smelt a chemical smell. It turned out that the body was a certain Colonel William Shy, who had been killed at the battle of Nashville in 1864. They had embalmed him and buried him in an airtight iron coffin, so he didn't really start to go off until someone broke it open. My estimate of the date of his death was 12 years out."

It was this incident that started him off on his current bizarre line of research. No one, he realized, had studied what really happened to a body after it was buried, so he set out to remedy the deficiency. Taking donated bodies, and unidentified victims passed on by a cooperative police force, he put them in a series of shallow graves of varying depths. Then, every six months, he dug them up again to study the rate of decay. The result has enabled the dates of murders to be established much more accurately.

Some of the bodies were left in the open air. Bass was surprised to return and find them almost bald. "It was the birds in the springtime," he said. "They were using the hair to build their nests. Now that's handy to know, because if you come across a body like that you can find the hair by looking in the nearby birds' nests."

He is full of morbid advice: "Coffins are bad things to be buried in - they leak and then fill up with water." "Never trust an undertaker. They can put in half a pint of embalming fluid and charge you for two gallons, because they know that no one is going to dig up Aunt Susy to find out."

Only once has he ever thrown up. That was on his very first job, when he had to assist in exhuming a woman from a waterlogged grave at the behest of a lawyer. "I got \$5 for gas," he recalled with a wry grin. "I guess the lawyer made a lot more than that."

Bass does not shun about it, but the fees that he now earns as state forensic anthropologist go into a student assistance fund, and he uses his own money to send graduate students to professional meetings.

He clearly cares for his students, and is worried that the field of anthropology is becoming overcrowded. "If you came to me and said you wanted to teach anthropology, I'd have to advise against it," he said. "But forensic work, now that's a different matter. There's still plenty of room in that." The eyes of the Marvin Bass III, Professor of the Year, gleamed behind his spectacles with enthusiasm. It may not be everyone's cup of formaldehyde, but he has found his vocation.

Study scheme gives miners second chance

Thanks to some creative accounting and the diversion of unused federal funds, unemployed coal miners and steel workers in western Pennsylvania are getting the chance to make a new start in life at the state's junior colleges.

At a cost of more than \$500,000, some 300 of them, aged between 25 and 45, are to be retrained to enter high-growth professions.

The laid-off workers, who will continue to collect unemployment and welfare payments while they are in school, have to take interviews and

aptitude tests and commit themselves for up to two years of study. Then they can choose from among the four courses being offered: a two-year associate degree programme in respiratory therapy, a one-year cardiovascular technician programme, an 18-month course in drafting technology or 12 months of applied computer technology.

They can also be employed while they take training, provided that they have been displaced from their original careers and are considered "under-

employed". The project is centred on Johnstown, Pennsylvania, which has suffered double-digit unemployment since the last recession. "We are seeing a number of people who have just given up," said Barry Denk, executive director of Centech, a regional industry-government-education partnership which is administering the programme for the education department. "We're trying to show prospective businesses that they can locate here," Mr Denk added. "We've got a good work force, and we're showing that we can retrain workers to meet business needs."

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The liberal linguist

Dr Philip Mansell who leaves the deputy directorship of North Cheshire College of Higher Education to take over the principalship of Bedford College this September, says his real yen "for running things" was developed at Birmingham Polytechnic, an institution he joined in 1975 as principal lecturer.

"Undoubtedly this is a very important stage in my career. I would not be in a position of thinking about running a large institution but for my experience there," he said.

Before Birmingham, Dr Mansell had a specialized background in linguistics, going back to 1968 when he did an MA followed by a PhD at Essex University.

After completing his PhD, Dr Mansell took a job as lecturer in the Institute of Phonetics at Munch University where he spent six years doing mainly research and learnt a lot about the German academic system.

"But as a liberal it was rather a shock to discover that when reforms were proposed to make higher education more akin to the English system, students totally opposed this because they saw this cutback in the length of their HE studies as giving too much importance to their schools studies," he said.

Dr Mansell says it would be disingenuous to claim that he did not go to Bedford for promotion. But he points out that the college in very much like North Cheshire in terms of the combination of non-advanced and advanced further education.

"This combination is really interesting because at one end you have Council for National Academic Awards courses and the other national Business Technician Education Council work. There is a lot of interaction and one side can learn a lot from the other," Dr Mansell said.

Bob Oxtoby came from the deputy principalship of Luton to Bolton Institute of Higher Education at a most interesting stage in the college's development.

"The institution is one of nine currently seeking polytechnic status, and in the case of Bolton very much on the grounds of getting increased resources."

"I am hopeful that Bolton will get a pale green light for a modest increase quite soon," he said.

When he came to Bolton last November, he brought with him a wide range of experience, spanning science, research, teacher training and administration.

After leaving Essex University where he spent a year as assistant to the dean of the school of physical sciences, Dr Oxtoby, chartered engineer by training, became the first full time administrator of the Society for Research into Higher Education.

Prior to this he spent some three years at Portsmouth Polytechnic lecturing in chemistry and fuel science. Here he developed his interest in further education teacher training which eventually led him in 1971 to Huddersfield Polytechnic where he was principal lecturer in curriculum studies.

At Huddersfield he was seconded to the government of Barbados as an educational adviser. His main involvement was in the development of technical education and the introduction of technical subjects in schools.

Higher principals

BRIEFING
BRIEFING
BRIEFING

Patricia Santinelli meets the seven most recently appointed heads of colleges of higher education

Catholic range of the new Newman woman



Dr Joan Cuming, one of the few women principals of a college of higher education, took over at Newman College last September.

She brought with her a vast wealth of academic as well as managerial and administrative experience, acquired mainly at the now defunct St Mary's College, Fenham, where her last post was as deputy principal.

Prior to this as head of a department of arts and science at the college she had within her orbit a spread of some 10 subjects ranging from pure science to outdoor education.

In fact she says she found herself swept into for more administration when she obtained her doctorate in 1971.

"This was a real turning point in her life and marked the change of direction from arts to pure science."

"My first degree was in geography and economics. I realised how one-sided this was so I studied 10 years part time to obtain my PhD in pure science in geomorphology. This entailed teaching myself chemistry and geology," Dr Cuming said.

The past year has been spent establishing herself at Newman, as well as being involved in the co-operative venture between her college and Westhill.

"Basically I see this venture as one of the most exciting developments in higher education. Here you have two colleges with a free Christian tradition coming and working together with no overarching structure," she said.

"The colleges still retain their individual entity and ethos. Each still has its own governing body. Staff are appointed to one college or another and are responsible to governors of the individual college but teach across both."

Dr Cuming, who is a committed Roman Catholic, says the co-operative venture has been made easier by the fact she has a good relationship with the Rev Dr Gordon Benfield, the new principal of Westhill.

Since last September there has been an unprecedented turnover of principals in the colleges of higher education. No less than seven, only one of whom is a woman, have taken over or will take over from this next term.

Each principal brings in addition to his or her administrative and managerial talents, some different and sometimes unusual expertise which is bound to be welcomed both in their college and to the Standing Conference of Principals and Directors of Colleges and Institutes of Higher Education.

The range covers research and expertise in mathematical giftedness, specialized aspects of linguistics, technical vocational education, further education teacher training, geomorphology, in-service education and training and multicultural education.

At least four of the new principals have had direct experience of running institutions already as deputy principals.

Three have current experience of what is described as one of the most unique co-operative venture - the association represented by Newman and Westhill colleges. This includes the new principals of each institution, as well as the ex-principal of Westhill, now to head Homerton College.



Reluctant voluntary

Alan Bamford who took over in April as the head of the prestigious Homerton College is, probably out of the seven new principals, one of the most reluctant to speak about himself and his career.

He does admit though that he was strongly attracted to Homerton. "Of course I wanted to come because of the college's distinguished record, its outstanding reputation for teacher training and its high standards, without even mentioning its location," he said.

The other attraction was that Homerton, like Westhill where he has now been for two years as principal, was part of the association with Newman College, is another voluntary college but one with a major difference in that it straddles the binary divide.

Homerton has had links with Cambridge University since 1894. In fact its BEd degree is in two stages, with the third and fourth year being spent in the university.

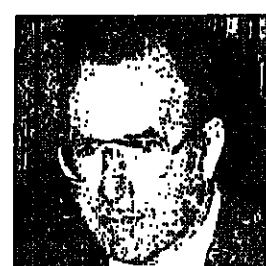
Alan Bamford's career started as a teacher and deputy headmaster in Lancashire's primary schools. After 10 years he went for a short spell to lecture in primary education at Liverpool University before joining Chester College.

Since then his career has been predominantly in voluntary colleges. He feels he has made quite a contribution to that sector, from head of education at St Katherine's College, Liverpool, to principal of Westhill and his present post.

He has also been on a remarkable number of committees - he can count at least 17, some of which he still sits on.

He has been president of the Birmingham Council for Christian Education, and vice chairman of youth clubs and a number of other bodies involved in youth work and religious education.

Inspector called to different line of duty



For the Rev Gordon Benfield, a former member of Her Majesty's Inspectorate, the principalship of Westhill College is not only a natural step in his career, but an ideal opportunity for putting experience gained on visits to institutions into practice.

As an inspector he had plenty of experience watching other people run institutions - and he visited practically every one in the country.

"But there is one big difference when you run your own institution: you have to take people with you," Dr Benfield says.

He believes bringing together two institutions like Newman and Westhill to be a unique experiment in higher education. Like Joan Cuming, his co-director in this joint enterprise, Dr Benfield is excited by the possibility of exploiting the different academic strengths of each institution, as well as by the different religious backgrounds of the two colleges.

"I sit here from the point of view of an Anglican clergyman," said Dr Benfield, who was ordained in 1980. "So I sit in the middle. Basically there is a definite Christian ethos about both colleges which straddles the academic role. They share Christian values but don't impose them."

Dr Benfield joined HM Inspectorate in 1971. He spent more than 10 years as an inspector for schools and teacher training, and then from 1982 until he took over at Westhill in April was staff inspector for teacher training based at Elizabeth House.

Very clearly this experience has made him an establishment figure, although a well respected one. The standing conference is undoubtedly looking forward to the benefit of his advice when the next thorny issues emerge from the Department of Education and Science or the Secretary of State.

Instilling a proper respect for Popper

Brian Gomes da Costa who from September officially becomes the new director of Bath College of Higher Education admits having a "bible" and even a "qure" - *Open Society and its Enemies* by Karl Popper.

So deep is his belief in Popper, whom he has admired since his days at the London School of Economics, that he has included a passage from the book in his address to Bath's students and linked it to the Government's recent Green Paper.

It is "Be hesitantly sceptical about 'authorities' and search for the truth,

however uncomfortable rather than for 'certain' knowledge. There is no such thing, only the search for truth by trial and error elimination."

Mr Gomes da Costa resents remarks that he is really rather a maverick. He considers this tantamount to an accusation of not being serious.

He adds that he may have earned that reputation because his style is not exactly British: rather than a briefcase he carries a Continental-style handbag.

In fact his career does not indicate

any particular frivolity, unless you count working for an American advertising company in Germany in the 1960s for about 10 weeks.

Before coming to Bath, Mr Gomes da Costa was vice principal of the Robert Gordon Institute in Aberdeen. He believes coming to Bath is bound to be one of the highlights of his career.

"I feel fulfilled, rather in the same way as I did at the North East London Polytechnic when I became head of the department of arts and modern languages."

A number of changes

Dr Tony Wood, the first mathematician to become a principal according to the standing conference, faced an immediate challenge at Luton College, even before the official date of his takeover in January.

He arrived there in November at a time when there was a mass exodus of the directorate. The then director was taking early retirement and his deputy Bob Oxtoby, went off to become the new principal of Bolton.

"Basically I left me with a lot of work, but also an interesting prospect," Dr Wood said. "For a start it gave me the opportunity to restructure from the top and to appoint a deputy who is complementary to me."



One of the changes he has implemented has been to set up a better information system within the college, a factor he regards as vital for efficient management.

The college has also installed a new computer system to carry management data, finance and statistics, which

allows information to be pulled out far more rapidly and efficiently.

Under Dr Wood's directorship the college has been far more outward looking, with a relationship with the community and business and industry in the area.

But in spite of his involvement with the college, Dr Wood is still able to find some spare time for his research on mathematically gifted children. This year he has been made Leverhulme fellow and is planning a series of field tests in different schools in England.

Tony Wood, a former Royal Navy teacher, says that if he has a hobby, it must be painting. In his youth he did a level art, which was a bit unusual for a mathematician.

"I was quite stunned when recently I met my old art school teacher, now a principal, who said he remembered me and still had the painting I had donated to the school."

Professor Bill Mitchell's first engagement as chairman of the Science and Engineering Research Council will be the inauguration of the council's £50 million Spallation Neutron Source at the Rutherford Laboratory in Oxfordshire. It will be a fitting symbol of the change in the council's affairs in the second half of the 1980s.

The SNS - designed to provide neutron beams for research on condensed matter - will be on offer to university scientists after 10 years' construction. And the rest of the council's capital programme - its also coming to fruition - there are no other large projects still under construction in Britain, and the overseas telescopes on Hawaii and La Palma are nearing completion. If Sir John Kingman - whose term as SERC chairman ends today - had to make sure these facilities were finished, Professor Mitchell's job is to find the money to run them.

It shouldn't be too hard with a budget of £300 million a year - there aren't all that many facilities, after all. Aside from the SNS and the telescopes, the council now only operates the Nuclear Structure Facility and the Synchrotron Radiation Source at Daresbury, the smaller Central Laser Facility at Rutherford and two observatories at Edinburgh and Herstmonceux in Sussex.

But the SERC, by far the largest of the five research councils, has suffered with the rest in the squeeze on the science budget since the late 1970s. And it has special problems in the range of jobs it is expected to do - from supporting the bulk of pure research in universities to backing an expanding portfolio of work in engineering and industrial automation - and in negotiating its way through a maze of international commitments. Some of these, notably the CERN laboratory in Geneva, the European Space Agency, and European facilities which complement the SNS and the synchrotron source, will be high on the new chairman's agenda as priorities are reshuffled over the next few years.

Professor Mitchell comes to the job with a background in solid-state physics and semiconductor technology, which he describes as "right bang at the interface between science and engineering". He also brings an unrivalled knowledge of the SERC, and of the history and administration of the current generation of large facilities.

He sought training as a metallurgist during the war, but military demands took him instead into physics and radio at Sheffield University. Graduating just after the war, he went to work in the Metropolitan Vickers research labs, looking at semiconductor materials for a firm now part of GEC. Doctoral research at Bristol was followed by a brief return to that lab, before moving to an academic post at Reading.

He stayed at Reading for 25 years, becoming successively professor, head of department and deputy vice-chancellor. He was there, riding the wave of Robbins-led expansion when the then Science Research Council was founded in 1965, and became a member of the council's physics committee. The SERC was later followed by chairmanship of the committee, and full council membership between 1970 and 1974.

At Reading, he wasn't especially happy doing duty as deputy v-c: "it was administration almost in the abstract". And he turned away from the obvious next step of a full vice-chancellorship to take up the reins at the Clarendon Laboratory, Oxford's mainstream physics centre. He has been in the Clarendon, a pleasant jumble of old and new buildings on the edge of the university park, since 1978 - he will take leave of absence for his five-year stint at the SERC's Swindon headquarters.

The Clarendon, with a research and technical staff 140 strong, is a laboratory which mixes basic, strategic and applied research, and is currently best known for its work on lasers. On the industrial side, Professor Mitchell points to spin-off companies like Oxford Lasers and the better-known Oxford Instruments, both run by ex-Clarendon physicists. It is an establishment for people like Mitchell himself, as he describes his scientific outlook: "I'm an experimentalist, I know laboratories, I use small grants, I use central facilities, a lot of my work has been between science and engineering."

He has some of the attitudes which go with that outlook, such as a belief that the particle physicists are due for a step-down. "It seems to me, speaking as a solid state physicist in Oxford, that CERN could have its budget squeezed a bit - and I think that when the Large Electron-Positron Collider is finished it



Professor Mitchell: reasonable demands

Looking for a sterling result

Jon Turney talks to the new head of the Science and Engineering Research Council

should be cut."

He hopes Britain can remain a member of CERN, but one of the jobs of the next few years is to work out how to manage a smaller contribution - though he stresses this is now a Government matter, out of the council's hands.

If Professor Mitchell is untypical, it is in his deep involvement in the large central facilities now sought by "small scientists", and his detailed knowledge of the SERC's operations. During his second term of council membership, which began in 1982, he has chaired a review of nuclear physics, which endorsed the further development of the Nuclear Structure Facility at Daresbury, and been a member of a panel reviewing commitments in space research, which decided to put more eggs in the European Space Agency basket. His latest job was leading a group examining the SERC's work in engineering - although he expects to pass this on when he starts work as chairman of the council.

In addition, he has a much more intimate knowledge of some facilities. For it was Mitchell's generation of solid state physicists who first realized the potential of the neutron beams which could be drawn from the new nuclear reactors for condensed matter research. This led first to the high neutron flux reactor at the Institut Laue-Langevin in France - to which the SERC still subscribes. Soon after, Professor Mitchell and others began working for a British facility for the same purpose. The design they eventually came up with, using a particle accelerator to spin-off companies like Oxford Lasers and the better-known Oxford Instruments, both run by ex-Clarendon physicists. It is an establishment for people like Mitchell himself, as he describes his scientific outlook: "I'm an experimentalist, I know laboratories, I use small grants, I use central facilities, a lot of my work has been between science and engineering."

Getting as much money as possible to exploit the central facilities - and to support SERC's other work - will depend partly on enhancing existing partnerships. Professor Mitchell reckons there is still a little work to do putting the council's house in order before going hard for more cash, if

only because science doesn't seem to have too many friends at the moment. But he is convinced of the need for more funds.

The house in order work will involve battles with astronomers, who stand to lose access to some overseas instruments such as the Anglo-Australian Telescope. And they may see closure of one of the domestic observatories - now mainly functioning as support centres for telescopes in countries with clearer skies - following a panel set up under Professor Kingman, yet to report.

Beyond that, both the outgoing chairman and his successor point to changes in the council's relationship with the universities. Sir John Kingman recalls a time five years ago when the University Grants Committee and the research councils didn't talk very much. That has now changed, he reckons, and will change more as the UGC begins to move toward more selective research support. He sees research councils taking more account of individual universities' plans in their grant awards to departments. And Professor Mitchell stresses: "If the funding decisions by the UGC are tearing gaps in well-funded departments, the SERC will have to take note."

He sees support for researchers in the universities as the council's main responsibility, but argues the money for this can be increased by developing partnerships elsewhere: with other countries for large facilities; with research councils for new computers; with the Department of Trade and Industry, and companies, for engineering work; and the new partnership with the Ministry of Defence for joint research grants.

But he is clear this will not be enough. The battle Sir John Kingman now says he failed to win - to increase overall science funding - will go on. Sir John believes the terms of the debate have now changed, with many more MPs and others now persuaded that basic science is important. The problem remains actually finding the cash. Professor Mitchell speaks in terms of reasonable demands. There is no point in asking for 10 per cent more every year. But if the Government's own forecast is for 3 per cent growth, then science must bid for a share of the potential extra public spending that could support - tax cuts permitting. "It's not unreasonable to ask to share in whatever growth is going to happen - it's a responsible point to make," he argues.

Sir John Kingman's four-year term at the SERC showed the council's room for manoeuvre is limited while the budget goes on losing value. First impressions are that neither context nor policy will change radically under his successor. Professor Mitchell has watched the evolution of the SERC's soon-to-be published corporate plan as a council member, and even though the composition of the council changes appreciably this autumn, the course for the immediate future seems set. He will trim the central facilities here and there, without touching the large new machines, look closely at the engineers' claims for new money in the light of the current review, and work on internationalizing the SNS. Larger changes than that will depend on making headway in the debate over the science budget - but that is a task borne by the whole basis research community, not just the chairman of their largest sponsor.

Ernest Boyer



Torpor, timidity and a much tougher route to the top

Professors in the United States are worried about their current status and future prospects, according to a national survey conducted by the Carnegie Foundation for the Advancement of Teaching. Irving Spitzberg, former Secretary General of the American Association of University Professors, captured the mood when he said: "there's a perception that things are bad and getting worse."

In 1984, the Carnegie Foundation surveyed more than 5,000 faculty members on campuses from coast to coast. Forty per cent said they are less enthusiastic about their work than they were when they began their academic careers. More than a quarter feel trapped in the profession, and one-fifth report that if they had to do it over they would not become college teachers.

A decade or two ago bright young professors had opportunities for promotion. If they were talented and energetic they could move from campus to campus, pushing for visibility and professional advancement. It did not always work out that way, of course, but the hope remained. Today, these same faculty, now middle-aged, are filled with doubt about their capacity to ascend the academic ladder.

Faculty are also frustrated about the lack of seriousness of today's students. Three-fourths of the faculty surveyed say that students are less interested in learning now than they were when they started teaching.

A political science professor at a large West Coast institution made this observation about his students: "They don't read. They have no sense of the world. I have a class in which only two or three students knew who the mayor was and they lived there their entire lives. With that as a backdrop, how are we supposed to educate them?"

Despite frustrations faculty do devote a great deal of time to their roles as campus citizens, especially at the departmental level. More than 90 per cent say they participate in the decisions of their departments. About half work on a campus-wide faculty committee and 35 per cent are active in the faculty senate.

The willingness of faculty to participate in institutional life is clear. They also report satisfaction with their relationships with colleagues, and more than 90 per cent enjoy opportunities to interact informally with students outside the classroom. Indeed, nearly 30 per cent say they often invite students to their homes.

The rise of part-time faculty - a 50 per cent increase during the 1970s - is seen as a threat by many college faculty. Today they occupy more teaching positions than ever - more than one-third in the United States.

More than half the faculty surveyed believe that part-timers are

taking positions away from full-time teachers.

Part-time teachers can enrich the campus by giving special knowledge and experience to the students. But the impact of such staffing arrangements on full-time faculty and the erosion of a sense of community on campus cannot be ignored.

Sixty per cent of faculty rate their salaries as either poor, or fair. During the 1982/83 academic year, the average American college professor's salary was less than half the average salary of a doctor or lawyer.

Along with displeasure over pay, faculty report an erosion of purchasing power. The average salary of a college teacher in the United States, after inflation, rose by only 2.5 per cent in 1984 - and this was the largest real salary increase since the 1960s.

College faculty are also caught in the cross-fire of conflicting signals about the priorities of their work. Departmental commitments, classroom preparation and teaching, and the students' need for academic guidance consume large chunks of faculty time.

A professor who advises about 10 students daily outside his classes told us: "I am glad when students come and talk. If I can advise them on anything - family problems, personal problems - I feel I have done something worthwhile."

On some campuses, the intense pressure for research and publication places added strain on a professor's time. Almost 40 per cent of faculty report that their job is a source of considerable personal strain. And more than 40 per cent agree that they hardly ever get the time to give a piece of work the attention it deserves.

One teacher put the issue squarely: "Faculty members feel pulled in two directions. Teaching is important, they are told, and yet faculty know that research matters most."

Yet nearly 70 per cent of faculty surveyed report that getting research support is harder now than it was two or three years ago.

More than half the faculty in our survey say they would seriously consider another academic job if one were offered. Of greater concern, though, is the fact that college faculty are quite willing to take non-academic jobs. Nearly 40 per cent say that they may leave the profession altogether within the next five years.

Steven Muller, president of the Johns Hopkins University, summarized succinctly the crucial issues facing faculty: "You can clearly see a lot of problems in the future of the professoriate. There are the problems of an ageing professoriate and its replacement, the problem of productivity and the matter of doing truly rewarding research - we are not going to address these problems by perpetuating the structure by which the faculty is now organized."

In the first of three articles on the NAB Peter Knight asks if its funding is a matter of policy or expediency

The National Advisory Body gives more money for each student in the polytechnics than in other large colleges. In their turn the large colleges get more money per student than the small colleges. While this decision is popular with the polytechnics it does not command enthusiastic support from other colleges who can see no justification for the polytechnics' preferential treatment.

The NAB has devised a complex and bewildering system for allocating the £617 million of the advanced further education pool. For all its complexity the system is a significant improvement over previous methods. The unit costs of all colleges are now closer together than they have been in the past. However, on too many occasions the system has been influenced by expediency rather than policy and it is increasingly producing results, such as the preferential allocation to the polytechnics, that are politically inconvenient, even embarrassing. For instance, in the 1985/86 financial year the "unit of resource" for a humanities student was:

- polytechnics, £1,477;
- major colleges, £1,261;
- minor colleges, £1,199.

So the NAB gives £216 per student more to the polytechnics than to other colleges. There has been a comparable differential every year except 1983/84, when a sudden outbreak of egalitarianism, and sufficient money, allowed an approach to be adopted that did not differentiate on the basis of the type of college.

There are two political problems that arise as a result. First, there are interests on the NAB who do not wish to differentiate in any way between institutions. In particular, the local authorities may well feel that such a system will only encourage the polytechnics in their aspirations for distinction. Therefore, the system is politically embarrassing.

The second problem is that it is technically inconvenient. The NAB would like to argue that the public sector should receive the same amount of money for teaching costs as the universities. As the current differentials between the public sector and the universities in terms of their teaching costs are huge, (the universities being significantly more expensive), this



Unfair helpings?

inspiration is not likely to be easily achieved. However, it is inconvenient to be arguing the principle that the public sector should have the same as the universities while at the same time, within the sector, the NAB differentiates between its colleges.

All these difficulties would disappear if it was possible to justify the differentials by some technical explanation. It is obviously in the interest of the polytechnics to find an explanation that justifies their higher level of funding. It is even more in the interests of the NAB to find such an argument since it could then square the circle, preserve differential funding, and avoid embarrassment. Thus various groups within the NAB have spent some months investigating this problem in an attempt to find a plausible interpretation of the differentials, particularly between the polytechnics and the major colleges.

There are two possibilities that might justify enhanced funding for the polytechnics. The first is that they undertake more degree work and that such work is inherently more expensive than teaching diplomas and certificates. The second is that it is essential that the polytechnics undertake research to support teaching and that this leads to additional costs.

A substantial amount of effort has been expended in seeing if there is any justification for allocating more money on the basis of degree teaching. The first problem that immediately appears is that the polytechnics do not have a monopoly on degree teaching. Therefore any enhancement for degree teaching, within a fixed sum of money,

may actually disadvantage the polytechnics. An early calculation showed that if 90 per cent of the pool was distributed to support all students and the remaining 10 per cent was exclusively allocated for degree teaching then the polytechnics actually lost some £16 million to the major colleges.

The second and more unfortunate feature is that it seems that teaching at non-degree level, typically BTEC Higher National Certificates and Diplomas, is actually more expensive than teaching degrees. The reason is that students on diploma and certificate courses tend to be taught for more hours than students on degree courses. Therefore, while the non-teaching cost of degree students tends to be higher, the expenditure on teaching staff, which is always the largest slice of any budget, is lower and overall the cost of a non-degree student is greater than the cost of a degree student.

This is an unfortunate result to say the least. There have been attempts to shift the ground of this argument to see if the correct answer can be obtained by juggling the information. For instance, the figures can be reworked based only on honours degree students; or they can be based only on the number of third-year honours degree students on the grounds that this is where the expense occurs. However, whatever way the figures are manipulated, bent, battered, or fudged, it is simply not possible to prove that degree teaching is inherently more expensive than non-degree teaching; indeed such evidence as does exist

implies that the converse is true.

As the data will not support the truth as the NAB would like it to be, the next argument deployed is one where judgements are made rather than facts analysed. A case can be advanced that the polytechnics, as a requirement of the Council for National Academic Awards, have to undertake research in order to support teaching. The cost of this research will not appear in any of the estimates of taught hours of students but nevertheless has to be met by the polytechnics.

While there is undoubtedly money spent in supporting research, it is exceptionally difficult to quantify. It is even harder to make a judgement about how much research is necessary to support teaching and it is impossible to get the figures to fit the facts as they are currently perceived. Even if a substantial proportion of the money was held back and redistributed to the institutions engaged in research, it is not possible to bend the figures to explain the current differences in the allocation between the polytechnics and the other colleges, which is always the actual problem.

Once again exemplifications make matters worse. If a massive 10 per cent (more than £60 million) of the pool is held back for research and the remaining 90 per cent is distributed on a uniform basis, then the overall effect is that the polytechnics would lose £14 million. Not a helpful result!

There is no data or evidence that supports or explains why the polytechnics should receive more money per student than the major colleges, or less contentiously, the

major colleges receive more money than the small colleges.

If the matter rested there the NAB's dilemma would at best be only inconvenient. Unfortunately information is now available that changes inconvenient into positive embarrassment. An analysis of what colleges actually spent in 1983/84 showed that despite receiving more money per student than the NAB the polytechnics were actually cheaper than the major colleges. The figures that are quoted for the expenditure per student between the different groups are:

- polytechnics, £2,100;
- major colleges, £2,160;
- minor colleges, £1,919.

(These figures include expenditure from fee income and other sources and so are larger than the unit of resource allocated by the NAB.)

This is not a wholly unexpected result as in 1981/82 the polytechnics spent £2,521 per student while the major colleges spent £2,681. Once again the polytechnics were cheaper.

Therefore, although the polytechnics receive more money than the major colleges in the pooling formula the evidence shows that when they spend their money they are actually cheaper. This is a cruel joke on the NAB. It could have led to the interesting situation that had the NAB succeeded in explaining the differences in the allocation formula it would now have to undo that explanation.

The most probable explanation for this curious situation is that local authorities have largely ceased to provide any additional money for their polytechnics but continue to top up the budgets of their major colleges. This is not surprising given the magnitude of the budgets involved. A 5 per cent top-up of all the polytechnics would cost the local authorities about £20 million. In comparison, a 5 per cent top-up of the major colleges would only cost £6 million.

The evidence suggests that even though they receive more money from the pool the polytechnics are the most efficient group of colleges as they receive less money from their local authorities. The polytechnics then balance their budgets by spending proportionately less on teaching staff, while absorbing any additional costs that might arise from research.

The entertaining question for the NAB is how it is going to deal with this contradiction. If it reverses the money for the polytechnics and provides additional money for the major colleges in the interests of equality, then it will be penalizing the most efficient group of institutions and rewarding those whose budgets are not so tightly under control. However, if it leaves the system in its present state then it has a politically embarrassing differentiation between groups of colleges and the tactically inconvenient different units of resources for teaching purposes. Its arguments for comparability with the universities by achieving a common unit of resource for teaching deservedly collapses in disarray. It is totally unable to explain the differences as they are essentially inexplicable.

Will the NAB punish virtue and reward sin? On its past performance this seems the likely outcome, so perhaps further cuts can be expected in polytechnic budgets as a result of a blind pursuit of the mythical equality.

But urban renewal based on private sector leadership, finance and control - particularly through corporate influences - is not without economic, social and political costs. The mirror-glass hotels and convention centres in downtown Boston and Baltimore are underwritten by massive public support, notably in the form of federal grants in the 1950s and again in the late 1970s. While the publicity material talks of the private sector rebuilding the city, statistics reveal that instead of the public dollar generating or "leveraging" four private dollars or more, the

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Scotland the brave new world

Robin Boyle and Michael Keating look at the changes in Scottish urban renewal policy

For some years past, a field trip to Scotland has been an obligatory part of the apprenticeship of aspiring urban and regional planners and social policy makers. From the regional plans and growth poles of the 1960s, through social work developments after 1968, area policies or Area Renewal project of 1976, Scotland has pioneered a series of urban policy innovations.

What was of particular interest to observers from south of the border was that, by the late 1970s, Scotland seemed to have gained the capacity for a coherent and co-ordinated attack on the syndrome of urban decline. Urban and regional economic priorities did not clash as they did in many parts of England; a single government department, the Scottish Office, dealt with most urban policy functions, bringing together social and economic aspects; and, in the Scottish Development Agency, there existed a powerful interventionist body combining environmental functions and the provision of industrial sites and premises with investment finance and business advice.

The GEAR project represented the most ambitious attempt at integrated urban renewal in the United Kingdom, aimed simultaneously at the physical, economic and social aspects of inner city decline. Yet, far from being the harbinger of a new approach to urban policy, GEAR has turned out to be the last of the old comprehensive renewal schemes based on the notion of multiple deprivation.

The SDA was never happy about being in GEAR, into which it was pushed within a year of its creation. GEAR pre-empted resources, time and effort which the agency would rather have kept free for more selective interventions in projects of its own choosing. It also became increasingly unhappy about the social policy role regarding this as a distraction from its own role of stimulating economic development. The Labour Government had never been very precise about what the role of the SDA should be, apart from "tackling industrial decay and employment" and giving "special attention to those industrial areas which have suffered the worst effects of the decline and decay of our older industries".

As the agency translated its general brief into an operational strategy, it refined its role to concentrate on economic and industrial activities and the promotion of viable enterprises.

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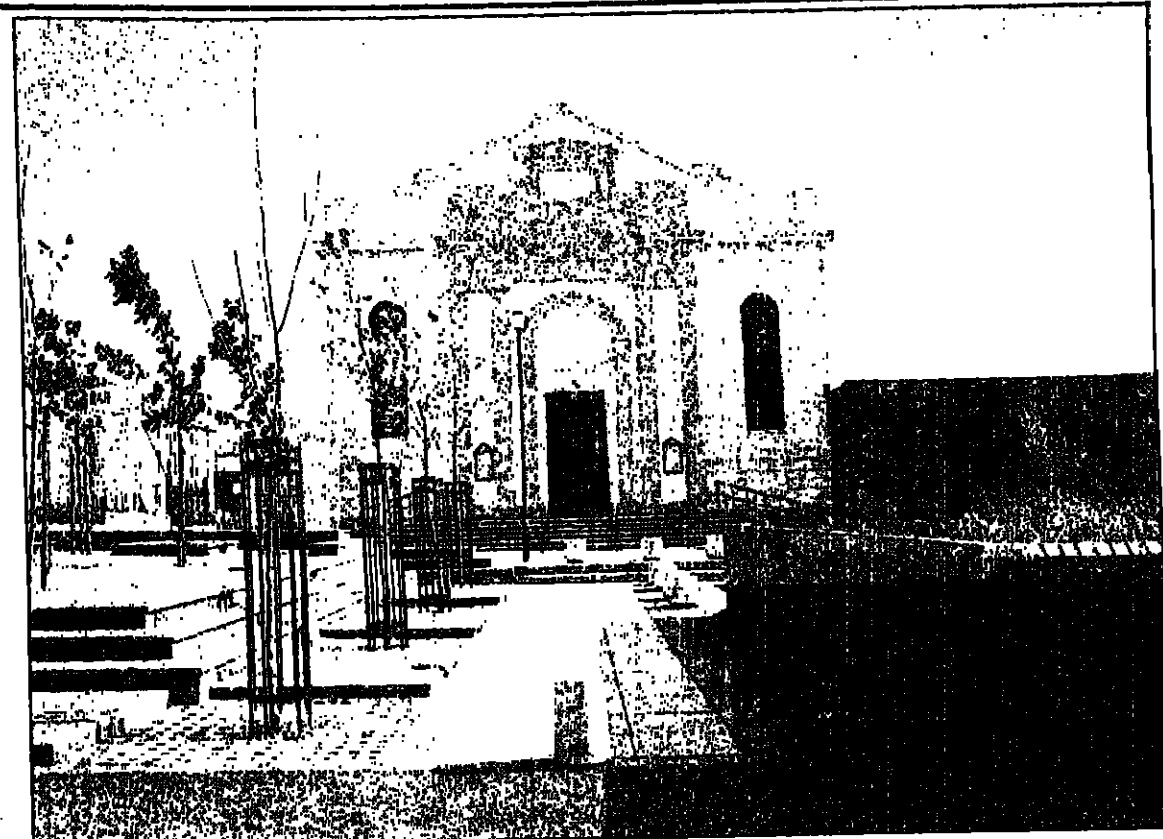
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Bain Square in Glasgow's East End is one of the many sites landscaped by the Scottish Development Agency as part of the Glasgow Eastern Area Renewal project.

accordance with the new hard-headed approach of "backing winners", it was only areas of potential, what then was to be the fate of the declining urban areas?

In most of the area projects, this problem was glossed over. The formula that projects would be sited, not in the most needy areas, but in those where there was the greatest gap between "performance" and "potential" allowed the SDA to maintain its hard-headed business language while being nudged by central and local government into areas like Motherwell, hit by major closures and threatened with more.

The area approaches have had their successes. At their best, they have represented positive development planning with the co-ordination of local government planning and infrastructure powers with the SDA's responsibilities for sites and premises, investment finance and the attraction of industry. In Dundee and Clydebank, the enterprise zone policy, potentially a disturbing force in urban development planning, has been successfully incorporated into highly planned and interventionist strategies. In the Clydebank zone, 229 companies had located inside the zone by 1984.

There is, though, some practical evidence emerging of the change of strategy in the ending of the formal "area project agreements" negotiated

with employment projections of 2,577, mostly into agency factories, as a result of the 19.5 million pounds of public money and a mere 16.25 million pounds from the private sector.

More recently, however, we have detected another change of emphasis heralding a further disintegration of urban policy. Under the influence of government thinking - made effective through appointments as well as through the usual channels of informal discussion - the agency has begun to de-emphasise urban renewal as such in favour of a more limited view of "business development". As so often, it has been preceded by a change of rhetoric placing the role of private initiative to the fore and talking in terms of "opportunities" rather than "problems". Language, indeed, has almost become a barrier to understanding what is happening in Scottish urban policy. It is not always possible to tell whether policy itself has changed and to some extent it may be true that the rhetoric of non-interventionism is merely being used to cover a continuation of the old interventionist line.

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Public support and private foundations

The Glasgow style of civic improvement was very obvious Victorian characteristics. Cities such as Birmingham, Liverpool and Glasgow all expanded under the guiding hands of "enlightened" urban entrepreneurs with their streets, sewers, warehouses and municipal park monuments to philanthropic endeavour. "Glasgow Action", however, is modelled more closely on contemporary developments in the USA where corporate influence is the fundamental component of urban change. Organizations such as the Allegheny Conference in Pittsburgh and the Greater Baltimore Committee have been instrumental in determining the scope and direction of urban renewal in these two cities.

Indeed the tangible achievements in the downtown areas of Philadelphia, Boston, Norfolk, the Renaissance Center in Detroit, have become the model for the "new" Glasgow.

But urban renewal based on private sector leadership, finance and control - particularly through corporate influences - is not without economic, social and political costs. The mirror-glass hotels and convention centres in downtown Boston and Baltimore are underwritten by massive public support, notably in the form of federal grants in the 1950s and again in the late 1970s. While the publicity material talks of the private sector rebuilding the city, statistics reveal that instead of the public dollar generating or "leveraging" four private dollars or more, the

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private sector is that the objectives of urban reconstruction will, by necessity, become commercial objectives. What's good for the business takes precedence over what's good for the community becomes the goal for the city; what's necessary for residential neighbourhoods may not figure at all. If the private sector can see some form of commercial benefit from direct involvement in urban governance then they will retain their interest. If they don't, then they may withdraw leaving a political, organizational and fiscal vacuum that may only serve to exacerbate urban decline.

Indeed, it is ironic that as the SDA encourages Glasgow Action, one of the more successful private downtown renewal organizations in the USA - the Greater Wilmington Development Council - has just announced that after 25 years the council will be finally disbanded. In the summer of 1985, formally, the council issued an official statement that the city of Wilmington had outgrown its need for such an organization. More significant perhaps is the counter suggestion that the major corporations involved no longer see a benefit in their corporate support for the Council.

We are therefore very sceptical of the utility of urban revitalization based on the objectives and resources of the private sector. In Glasgow there may just be the business leadership to regenerate the service sector given sufficient public support, but in the industrial towns of north Lanarkshire, there is precious little

evidence of a healthy native capital-

ism. In the Glasgow peripheral

estates of Easterhouse and Drum-

chapel, the idea is utterly fanciful.

To supplement public expenditure

in urban renewal with private invest-

ment - particularly in the form of

new housing - will make a valuable

contribution to civic improvement.

But to replace public investment and

control with private money and

objectives may benefit those with a

vested interest but may have serious

consequences for areas that cannot

guarantee a return on capital in-

vested.

In practice it is unlikely that

Scotland's cities will be turned into

businessmen's paradises. Local au-

thorities will continue to press the

SDA to put money into areas of need

and may well develop their own

interventionist strategies on the lines

of the more radical English councils.

The Scottish Office, too, will respond

to political needs and nudge the

agency into areas of high unemploy-

ment. These influences will modify

the trend we have described, but the

general strategy is clear. Scotland as

a whole may benefit from "Silicon

Glen" and the sectoral policies of the

SDA, but Scotland's run-down cities

and their jobless residents may have

to be content instead with a much

reduced social welfare policy.

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BOOKS

Children of the crucible?

The Transplanted: a history of immigrants in urban America by John Bodnar
Indiana University Press, \$27.90
ISBN 0 253 31347 3

The very title of this book raises echoes of Oscar Handlin's *The Uprooted* (1951). Since that classic recreation of the world of the European who flooded into the United States during the century after 1820, a mass of research into immigrant origins, attitudes and aspirations, their behaviour at work, at home and at church, has destroyed Handlin's image of conservative, deferential, parochial, pre-modern peasants overwhelmed and alienated by an industrial society they could scarcely understand. Now, synthesizing all those highly specific monographic studies, John Bodnar has boldly formulated a new interpretation of the American immigrant experience in general.

In one respect he falls short of Handlin: his book lacks the literary flair of *The Uprooted*. At times his style bogs down in weak verbs and abstract nouns; at others he irritatingly incants the word "capitalism" in half-a-dozen different meanings as if to disarm potential critics from the academic left. But in other respects his book far exceeds its distinguished predecessor: full of hard information, supported by proper scholarly apparatus, it is worth consulting for its endnotes and bibliography alone. And the two hundred pages of text present a view of urban immigrants far more subtle and credible than the uprooted victims of Handlin's imagination.

Bodnar rejects simple romantic views of life before emigration. Throughout Europe – and Mexico and Japan – economic change was disrupting traditional societies; emigrants were accepting the demands of a wage economy and the need for mobility, even before crossing the Atlantic. On the whole it was not the impoverished who left, but those who had something to lose from impending change; and often their aim was merely to earn money to help their kin back home, and themselves when in time they returned.

Not that the immigrants were modernized men on the make, concerned solely to cash in on America's labour shortage. They retained a strong sense of family, clinging together in kinship and regional groupings. Far from collapsing, the family survived in America in its traditional nuclear form and even flourished as an economic unit. Far from deferential or helpless, the



Immigrant family at Ellis Island, a photograph from John Bodnar's book

immigrants resisted demands of employers that in any way threatened the integrity or living standards of their communities, and pre-industrial traditions of communal self-protection taught them the tactics of resistance, if not of permanent organization. However, their response to American conditions was not simply a consequence of their pre-emigration culture, as Herbert Gutman has suggested, since many immigrants willingly sacrificed some traditional values in accommodating to the economic reality of their position as industrial workers.

Bodnar rejects a simple class interpretation as forcefully as he does an overemphasis on the distinctiveness of particular ethnic groups. Immigrants belonged to both class and ethnic groupings, and every individual, every family, was likely to respond differently to American capitalism, according to pre-emigration social status and culture, location, opportunity, and personal experience. Certainly ethnic groups were far from united; highly

mobile, they did not live in exclusive ghettos, while their churches and fraternal organizations were fragmented. Above all, immigrants were confronted by competing leaders and ideologies, by religious leaders, socialists, and the minority of immigrant entrepreneurs who made it into the American middle class.

In this situation, immigrants did not as a whole accept or reject the culture of their new country, nor did they follow a simple line of progressive adaptation; they above all displayed a pragmatic determination to make the best of a situation that was not of their own choosing. Victims of "capitalism" they were, but, transplanted and uprooted, the everyday lives that they lived in America were at least in part of their own making.

Donald Ratcliffe

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Held to ransom

American Hostages in Iran: the conduct of a crisis by Warren Christopher et al
Yale University Press, £25.00
ISBN 0 300 03233 1

Shortly after President Reagan's first inauguration, Secretary of State Alexander Haig confidently proclaimed that "The present Administration would not have negotiated with Iran for the release of the hostages" who had been taken by student revolutionaries in November 1979. Those words would haunt Reagan with uncomfortable irony some four years later after American citizens had been hijacked in an airliner and then taken hostage by militant Shi'ite Muslims in Beirut. He found that he too would have to negotiate with men who were desperate in their intentions and uncertain in their political authority. He soon learned that a refusal to negotiate can encourage terrorism as much as accommodation. None of us likes to be held to ransom, but our preferences become academic when we are threatened with death by captors who have already displayed an excessive willingness to comply with their

need *bêtes noires*, and Washington was an attractive and non-irrelevant choice for that role. However, President Carter and his advisers were not prepared to accede to Iran's demands. The return of the Shah would mean sending an old personal ally to certain death; the "confession" of guilt of immorally sustaining the ancient regime was a repudiation of a relationship that had been cultivated for a quarter of a century; and the seizure of the Shah's financial assets would be an unauthorized, extra-legal act that would rock the banking world to its foundations.

Carter had few choices. He could ride the storm patiently, but face an increasingly restless public at home. He could retaliate militarily, but that would endanger the hostages further and turn other Islamic nations against the US (the Soviet invasion of Afghanistan was a sobering illustration). Or he could attempt to rescue the hostages. This last course offered flexibility and a modicum of determination. The abortive rescue invasion, described by Gary Sick, was undertaken with open eyes. Strangely the planners were optimistic that they could whisk the American hostages mission, dogged by poor weather, mechanical breakdown and bad luck, was, according to Sick, "a failure of military execution, not of political judgment or command." But it militate

Setting standards

Challenge to American Schools: the case for standards and values edited by John H. Bunzel
Oxford University Press, £21.50
ISBN 0 19 503556 9

The Schools We Deserve: reflections on the educational crises of our time by Diane Ravitch
Basic Books, £21.95
ISBN 0 465 07236 4

American education is now in one of its cycles of reform. Excellence is the slogan of the day. The social goals of the 1960s – social adjustment, racial balance, bilingual education and the like – have taken a back seat in the effort to restore academic standards to education at all levels.

The last time that excellence was in vogue, after the Russians launched Sputnik in the 1950s, massive amounts of money were poured into education and the academic side of the schools received great emphasis. Now, the cycle is repeating itself but, in keeping with Reaganism, without the money. If the contemporary history of American education is any indication, the thrust will change again in a few years to some "new" idea, one which probably was popular at an earlier period. Yet, one cannot dismiss the current excellence movement. It has already had an impact on the schools and is, without question, the focus of discussion. For the first time in a decade, education is on the national agenda and widely debated.

Challenge to American Schools and *The Schools We Deserve* represent two wings of the current debate – a wing that is now in the ascendancy. Most of the authors in these two volumes have been identified with the "neo-conservative" movement in American intellectual life. They argue for tougher standards for education at all levels. They criticize many of the social policies of the liberal 1960s as misplaced, ineffective and ill-conceived. The schools, they argue, waste money on racial quotas and other social programmes. The schools should do what they were originally intended to do: educate students by using a curriculum that is academically rigorous and places demands on students. Expensive social programmes are not required – it is argued that they might even be counterproductive. This general line of debate is music to the ears of the Reagan administration. Indeed, one of the contributors to *Challenge to American Schools*, Professor Chester Finn Jr, who wrote a thoughtful and critical essay on the role of teachers' unions in academic change, has recently been appointed to a senior position in the US Department of Education. The editor, John Bunzel, a political scientist, is a senior fellow of the Hoover Institution at Stanford, a conservative think-tank that will be the repository of the Ronald Reagan presidential papers

and library. These volumes, both because of the key political position of the contributors in American education and because of the ideas they express, are important benchmarks in contemporary debates. Further, they are, for the most part, well written and relatively free of the jargon that characterizes much writing on education. The theme of these books is a simple one: that schools do one thing well – educate children. Many sub-themes flow from this proposition. First among them is that when the schools are asked to participate in social programmes, however laudable the goal, the basic educational process is disrupted and problems occur. Thus, many of the hosing programmes of the past two decades, which have been aimed at ensuring a racial balance in the schools are, in the views of the contributors, misguided and ultimately unsuccessful.

Most of the authors demand an academically rigorous curriculum that places emphasis on the traditional sciences, literature, mathematics and history. Vocational education and other "frills" are considered inappropriate for the most part. As the curriculum has been compromised, so too have basic educational standards so that a degree from a secondary school no longer counts for much. Much is made of the decline in the SAT (Scholastic Aptitude Test for college entrance) scores over the past decade. The scores have declined, it is argued, because the quality of instruction has declined and the integrity of the curriculum in primary and secondary education has been compromised. Even at the level of the colleges and universities, the willingness of academic institutions to provide remedial courses debases higher education.

While there are many common themes in these two books, there are some important differences. *Challenge to American Schools* is a collection of essays by a number of educators who are, from somewhat different viewpoints, critical of the status quo of American education and who argue, generally, for tightened standards. Robert Hawkins and Myron Atkin on the nature and process of educational change; Denis Doyle, arguing for the effectiveness of private schools; and common theme in many of the essays, what they were originally intended to do: educate students by using a curriculum that is academically rigorous and places demands on students.

Diane Ravitch's *The Schools We Deserve* deals with many of the same themes, but this volume consists mainly of her previously published essays. The themes covered in this book include the history of educational reform in America, issues related to bilingual education, the education of minorities, trends in American education and related matters. Diane Ravitch is one of America's most prominent historians of education – she is at present the most visible, and these essays, reprinted from influential publications such as the *New York Times*, *New Republic* and the *American Scholar* are testimony to her influence. Her neo-conservative position, which opposes school busing to achieve racial equality, supports private education and is very critical of bilingual education programmes, is very much in the mainstream of American politics. Professor Ravitch is a thoughtful commentator and, even if one disagrees with her position, her views must be taken seriously. There is a consistency in her perspectives – and if one starts out with the view that the traditional curriculum and high academic standards are the main foci of the schools, then all else follows logically.

American education is undergoing a considerable change – very likely less and less than currently meets the eye, but none the less significant. The two books are as good a guide as any to the "new order" in American education.

Philip G. Altbach

Professor Altbach is director of the Comparative Education Center at the State University of New York at Buffalo.

and library.

These volumes, both because of the key political position of the contributors in American education and because of the ideas they express, are important benchmarks in contemporary debates. Further, they are, for the most part, well written and relatively free of the jargon that characterizes much writing on education. The theme of these books is a simple one: that schools do one thing well – educate children. Many sub-themes flow from this proposition. First among them is that when the schools are asked to participate in social programmes, however laudable the goal, the basic educational process is disrupted and problems occur. Thus, many of the hosing programmes of the past two decades, which have been aimed at ensuring a racial balance in the schools are, in the views of the contributors, misguided and ultimately unsuccessful.

Most of the authors demand an academically rigorous curriculum that places emphasis on the traditional sciences, literature, mathematics and history. Vocational education and other "frills" are considered inappropriate for the most part. As the curriculum has been compromised, so too have basic educational standards so that a degree from a secondary school no longer counts for much. Much is made of the decline in the SAT (Scholastic Aptitude Test for college entrance) scores over the past decade. The scores have declined, it is argued, because the quality of instruction has declined and the integrity of the curriculum in primary and secondary education has been compromised. Even at the level of the colleges and universities, the willingness of academic institutions to provide remedial courses debases higher education.

While there are many common themes in these two books, there are some important differences. *Challenge to American Schools* is a collection of essays by a number of educators who are, from somewhat different viewpoints, critical of the status quo of American education and who argue, generally, for tightened standards. Robert Hawkins and Myron Atkin on the nature and process of educational change; Denis Doyle, arguing for the effectiveness of private schools; and common theme in many of the essays, what they were originally intended to do: educate students by using a curriculum that is academically rigorous and places demands on students.

Diane Ravitch's *The Schools We Deserve* deals with many of the same themes, but this volume consists mainly of her previously published essays. The themes covered in this book include the history of educational reform in America, issues related to bilingual education, the education of minorities, trends in American education and related matters. Diane Ravitch is one of America's most prominent historians of education – she is at present the most visible, and these essays, reprinted from influential publications such as the *New York Times*, *New Republic* and the *American Scholar* are testimony to her influence. Her neo-conservative position, which opposes school busing to achieve racial equality, supports private education and is very critical of bilingual education programmes, is very much in the mainstream of American politics. Professor Ravitch is a thoughtful commentator and, even if one disagrees with her position, her views must be taken seriously. There is a consistency in her perspectives – and if one starts out with the view that the traditional curriculum and high academic standards are the main foci of the schools, then all else follows logically.

American education is undergoing a considerable change – very likely less and less than currently meets the eye, but none the less significant. The two books are as good a guide as any to the "new order" in American education.

Philip G. Altbach

Professor Altbach is director of the Comparative Education Center at the State University of New York at Buffalo.

The Institutions, structures and processes of American higher education are the subject of a new book by Gregory A. Barnes, *The American University: a world guide*. It includes sections on how the credit system works, and how the undergraduate and graduate class operates. The book is published by the ISI Press and distributed in this country by STM Distribution.

Robert Garson

Dr Garson is lecturer in American studies at the University of...

BOOKS

Creative instinct

Study of Thomas Hardy, and other essays by D. H. Lawrence

edited by Bruce Steele
Cambridge University Press, £25.00 and £12.50
ISBN 0 521 25252 0 and 27248 3

D. H. Lawrence: a century consideration edited by Peter Balbert and Philip L. Marcus
Camell University Press, \$25.00
ISBN 0 8014 1596 9

The real point of the latest volume in the Cambridge Edition of D. H. Lawrence is not the title-piece on Hardy but the felicitous gathering together, in the later pages, of six essays on novel. All were written in the mid-1920s, and they constitute some of Lawrence's most accessible literary criticism.

One of these essays, "The Future of the Novel", was, until the present edition, known as "Surgery for the novel – or a Bomb". This was a title conferred upon it by the *Literary Digest International Book Review*, where it appeared in April 1923, somewhat censored. Indeed, the text is here printed for the first time as Lawrence wrote it.

The other essays, all dating from 1925, are "Art and Morality", "Morality and the Novel", "The Novel", "Why the Novel Matters" and "The Novel and the Feelings". The last two were not published in Lawrence's lifetime. All six amount to a sustained argument out of which comes Lawrence's crucial contrast between the Intuition and the Mind. That is to say, the essays celebrate the creative instinct which appears to be in touch with the universe, as opposed to realistic writing – that of Flaubert or Proust, for instance – imposed by the limitations of its society.

There is nothing of this order in the "Study of Thomas Hardy" itself. Nevertheless, readers may be disappointed at the sketchy account which the editor gives of its early history. We know that the "Study" was commissioned by Nisbet & Co as one

Mellow light

Moments of Being (revised and enlarged edition) by Virginia Woolf
edited by Jeanne Schulkind
Chatto & Windus, £12.95
ISBN 0 7012 0616 0

Reviewing a volume of Henry James's unfinished autobiography, Virginia Woolf observed that, "all great writers have... an atmosphere in which they seem most at their ease and at their best; a mood of the great general mind which they interpret and indeed almost discover". To her, James seemed "most entirely in his element", not in his wonderful novels, but in his "yet more wonderful" memories, illuminated by the "mellow light which swims over the past". It is in "half-light" that James "sees most and sees farthest", a paradox which applies equally well to Woolf's own fragments of autobiography. Unpublished in her lifetime, these were first collected in 1976 as *Moments of Being*, a revised and enlarged edition of which has now appeared.

Showing us Woolf in a reflective mood similar to James's – and arguably more at ease than in her fiction. Not that Woolf is consistently relaxed throughout the book, which includes diverse items ranging from the occasionally arch "Reminiscences" (pre-dating by eight years the publication of her first novel) to "A Sketch of the Past", begun in 1939 and worked on intermittently until shortly before her death. A comparison of these two essays reveals just how fundamental and enduring was Woolf's belief that "our lives are pieces in a pattern" and, simultaneously, how her ability to

of a series of short books about modern authors, designed for students. What remains unclear is whether Lawrence actually submitted the work or not. Certainly Nisbet never published it, issuing instead a book on Hardy by the theatrical reviewer, Harold Child, who reduces the Wessex Novels to wishy-washy novelettes. Of *The Return of the Native*, for instance, Child remarks "Eustacia and Wildeve have been whirled by desire to death". But even this sort of paraphrase would, given the climate of the time, have been more acceptable to an educational publisher than the treatise that Lawrence had written. Not only do a mere three out of the ten chapters in any way relate to Hardy, but the style overall is pregnant with misus and *ahnung!*

"The Study of Thomas Hardy" was coloured by the struggles of its inception. It was begun in September 1914, a month after the war had started and, by dire coincidence, after Methuen had rejected what Lawrence thought was his final draft of the novel now known as *The Rainbow*. The wholesale rewriting of this novel ran concurrently with the composition of the "Study". In the *Cornell Centenary Consideration*, of which he is co-editor, Philip L. Marcus makes the valid point that the

rhetic of the "Study" resembles certain authorial interventions in *The Rainbow*. For example, "Alas, that a risen Christ has no place with us!" actually belongs to Chapter X of the novel, but it might very well have been one of the more horrid passages of the "Study". However, Marcus takes it no further, being basically concerned to show an affinity in attitude between Lawrence and Yeats towards the occult. This is a tendency characteristic of the *Centenary Consideration* as a whole.

The other editor, Peter Balbert, comments that the "Study", despite this community of language, is not to be used as a skeleton key for *The Rainbow*. However, this hardly original aperçu is a mere footnote in a disquisition upon D. H. Lawrence and marriage. Other contributors to the *Consideration* follow their editors' lead in abstracting from Lawrence's perceptions one pseudo-philosophy after another, minimizing in their efforts the subtle processes of the great author's verbal art. Lawrence's work is instinct with ideas, but he has no standing as a systematic philosopher. His various works cannot be reduced, even by so learned a scholar as George J. Zytarus, to a Metaphysics of Desire.

Lawrence's manifold particularities cannot be aggregated, even by so ingenious a critic as Sandra Gilbert, to the idea of the mother as Healer of the Soul!

There are, however, two outstanding contributions that rescue this centenary volume from academic generality. Robert Kiely shows how Lawrence's apparent informality, in his essays as well as his novels, amounts to an exploration of experience beyond the means of the realists whose techniques he rejected. In a related argument, Avrom Fleishman shows how apparently loose colloquialism in the later Lawrence is, in fact, a dramatic device to indicate the inner voices of the *dramatis personae*. Both these contributions are very much in the spirit of Lawrence's 1923 and 1925 essays on the novel. They represent the critic listening out for what Lawrence terms "the low calling cries of the characters as they wander in the dark woods of their destiny".

Philip Hobsbaum

Philip Hobsbaum has recently been appointed titular professor of English literature at the University of Glasgow.

In the margin

British Poetry of the Second World War

War by Linda M. Shires
Macmillan, £25.00
ISBN 0 333 36949 1

The danger in surveying the British poetry of the Second World War is that you leave the war out. Ian Hamilton, introducing his excellently representative 1965 anthology *The Poetry of War 1939-45*, could reach the following conclusion: "To be shared, accurately observed and self-aware; this was one way of coping with a dreary, pointless and intermittently brutal interruption of the personal allegiances that really mattered".

The war, patently, involved more than this. But for most British poets it did not. The strength of the general run of their poetry rests in the poet's ability to recognize that, like Roy Fuller, "We can only write in the margin. Here we mourner our dead." Alan Lewis, a conscript in a tented camp in wet weather, found that he thought "as indifferently/ As of ourselves" of "the loud celebrities/ Exhorting us to slaughter, and the herded refugees". The circumstances conditioned the response: the poem defines and exposes the limitations of the only perspective it can offer. When the poets wrote of battle experience something similar happened. Keith Douglas, writing of the desert war, Alan Ross and Charles Causley (both oddly omitted by Dr Shires) writing of naval warfare, all portrayed a feeling

of remoteness from the fighting they were engaged in, the killing from a distance and by remote control.

Concerned with the poet's state of mind, the literary scene, the individual writer's development, Dr Shires misses this dimension. The reality of war, in her account, becomes the reality of knowing a war is on; "the traumas of worldwide holocausts" are reduced to generalized knowledge; "active involvement" means emotional involvement and not the active participation in killing which distinguishes war from peace. As a result Dr Shires's observations on psychological aspects of Keith Douglas's progress are marred by the misleading emphasis of her conclusion that his war poetry was "more personal than public". Her spirited attempt to reinstate Sidney Keyes, which helpfully explains his use of literary themes and allusions, does not remove any misgivings we may have about the literary textures of his work. Alan Lewis's developing imaginative and political reach is lost in her account of his attempts to find a personal balance, an account which verges on the patronizing.

Discussion of these three poets makes up the second half of her book. The first is a generally useful survey of the situation of poetry in Britain in 1939 and the opening years of the war. Effectively using *Between the Acts* to set the scene, Dr Shires describes the end of the thirties magazines and the beginnings of those of wartime; and through personal interviews as well as archive material she builds a portrait of Oxford in wartime, to convey the outlook of young writers. She efficiently deals with the exaggerated importance attributed to the Apocalyptic, Dylan Thomas's relationship to them and, appropriately, directs our attention towards Cairo poetry, including that of Spencer, Fraser and Tiller. In these ways Dr Shires is bringing into the academic domain the revised version of the forties offered by anthologists and critics of the mid-sixties. That revision she insufficiently acknowledges, nor does she take account of its 1976 work of her main predecessor, Vernon Scannell.

In consequence her book is not only a work of consolidation rather than the innovative contribution it may appear at face value: it deprives itself of the larger perspectives proper to the literary historian. The argument about "the Movement" view of the forties had polemical purpose 20 years ago. Today it is distinctly limiting. It distracts Dr Shires from pursuing the good indications that "forties" and "fifties" poetry may not be so different after all. It encourages her to avoid full discussion of the older poets' contribution (Spender, Silworth, Eliot and HD among them), and it means that she does not touch on such issues as the extraordinary impact of Keith Douglas on the generation of poets who succeeded him.

Desmond Graham

Dr Graham is senior lecturer in English at the University of Newcastle.

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13 Bedford Square, London WC1B 3JF

BOOKS

A man possessed

In the Presence of the Creator:
Isaac Newton and his times
by Gale E. Christianson
Free Press, £18.95
ISBN 002 905190 8

The first man to attempt a life of Newton was his kinsman John Conduitt, for whom Newton's "virtues proved him a saint, and his discoveries might well pass for miracles". This attitude did not fade after the middle of the 18th century. One hundred years later, William Whewell, master of Newton's former college, observed pointedly that "those who love to think that great talents are naturally associated with virtue have uniformly represented him as candid and humble, mild and good". In our time, however, it is fashionable to make heroes pure and it is demanded that the biographer should turn over a few stones to see the dark underside of genius. Yet it is still the case that Newton preserves his celestial otherness.

No longer so pure, perhaps, "Britain's best" is still inhuman: in this account, Christianson sees him as "a mutant", a "man possessed", whose life "was spent perilously close to that indefinable boundary which separates the rational and the orderly from the frenzied abyss of psychic chaos". The oddly manic tone which is maintained throughout this book sustains the picture of disorder and mental decay which its author wants to construct. Newton himself, who is ranked with the Diety as the "creator" of the title, is seen as switching between models of the universe as a machine or as a vital animal, and so Newton's mind is seen as switching between the delirium of mania and the precision of an "abstracted thinking machine". What features of Newton's place prompt this curiously intense response from his latest biographer?

The challenge in writing the life of a great scientist centres on the problem of connecting the palpable accomplishments of detailed technical work in natural philosophy with the context of the age. This book promises us a story of "Newton and his times" and succeeds at neither. The resources to perform this worthy project do exist - after the past decade's achievements of what R. S. Westfall has labelled the "Newtonian industry", they exist in abundance. Newton's manuscripts are beginning painstakingly to be sifted; the papers on mathematics are already published in a magisterial edition by D. T. Whiteside; the optical papers are beginning to appear under the editorship of Alan Shapiro; and there are welcome proposals for an edition of the huge mass (two and a half million words) of Newton's writings on theology and alchemy. Alongside volumes of Newton's correspondence and accessible collections of his papers, two important biographies have appeared within this period.

The first, by Frank Manuel, offered a startlingly bold assessment of Newton's psyche and charted in meticulous detail, with a liberal dose of ingenious speculation, the tortuous path of the Newtonian mind through 60 years of unceasing labour and personal conflict. While many of Manuel's claims have been questioned, his book was both highly readable and enormously exciting. Indeed, Christianson makes full play with many of Manuel's suggestions about the relation of Newton with both family and colleagues, often to the extent of echoing analyses of Newton and "the visionary's near-madness that kept him scribbling out equations and watching over crucibles with a religious determination so carefully hidden beneath a placid exterior". Manuel's was an account which did not seek to offer a way of linking Newton's life with his triumph; Christianson is, by contrast, often too timid to attempt this essential biographical task. The leading psychic landmarks are explored in detail, such as the infamous "black year" of 1692-93 when Newton broke with his allies and accused John Locke of trying to "embroider" him with women. But such anecdotes do not amount to a successful biography.

Christianson's other source, here

only, is the clearly definitive biography by R. S. Westfall (*Never at Rest*, 1980), in which he provided a minutely worked analysis of Newton's various preoccupations in optics, mechanics, mathematics, alchemy, theology, chronology and astronomy, doing justice to each separate component of this extraordinary output. Westfall made it impossible to underestimate the meaning of alchemy or of the heretical reaches of anti-Trinitarian religion, and Christianson relies on Westfall's explorations of these areas for much of his outline of what he calls "the unmitigated passion of Newton's life". Elsewhere, and less happily, Christianson strays from the path of excellence which Westfall established. When discussing the religious infighting which broke out among Newton's followers, Christianson simply reproduces C. A. Roman's quite erroneous identification of the Newtonian Richard Bentley as the author of *The Analyst*, a polemic attack on the heresies of another Newtonian, Edmund Halley. In fact the work was written by Bishop Berkeley, not friend of infidelity nor of the Newtonians.

In his discussion of Newton's natural philosophy, Christianson often prints "redrawn" versions of diagrams in optics and mechanics when both Westfall and J. A. Lohne have pointed out

the extreme importance of such diagrams in their original and in their "corrected" states. A manuscript on elliptical motion, which is either an intriguingly early version of some theorems of the *Principia*, or is a simplified proof sent to Locke in 1699, is treated by Christianson as both evidence of Newton's "intellectual feat whose magnitude can hardly be overstressed" and also of Locke's "tenuous hold" on the contents of Newton's great book.

Such worries arise just because of the laudable aim of this biography: to render accessible to a wider audience some of the insights historians have now produced which might enable us to connect Newton and his setting. Without a more complex and subtle model of how work in natural philosophy could be contextualized, such a project seems bound to fail. The reader is left with a sense of confused admiration for an apparently isolated mind whose psychological burden is at once the occult source of Newton's power and the obstacle against which that power struggled. Christianson understandably rejects Manuel's suggestion that Newton might have tried to "castigate" the *Principia*, but we are offered instead the thought that Newton's machine-like mind was just that which "some scientists predict humankind

may become through evolution and others hope to create by the administration of powerful mind-altering drugs". Such talk hinders rather than helps an effort to write Newton's history and to open up natural knowledge as it is made by human beings. Christianson ends up by splitting the man from his times. Thus, for example, he suggests that only an English rather than Latin edition of the *Principia* would have made Newton "a part of his nation's history as well as its science". The two are in fact inseparable. The public fights in which Newton was so often engaged were key events in the construction of this history. Christianson documents many of these wars, such as the heroic battle against Leibniz, but he leaves such episodes with the lapidary comment that "a hint of the Enlightenment was in the air". In emphasizing the potency of Newtonian natural philosophy, this biography is forced to make do with a mix of psychology and hagiography. As Newton himself put it: "Men are not sainted till their vices be forgotten".

Simon Schaffer

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Laws of thought

George Boole: his life and work
by Desmond MacHale
Boole Press (Dún Laoghaire), £24.95
ISBN 0906783 05 4

In several ways, the story starts with J. L. Lagrange (1736-1813). A major mathematician of his time, his life's work was largely devoted to founding the main streams of the mathematics of his day on purely algebraic principles. In consequence, two new algebras emerged: one called the "calculus of operations" (today, "differential operators"), in which the basic process of differentiation was treated as an operator on a mathematical function to produce its derivative; and the other the "calculus of functions" (today, "functional equations"), in which these functions were treated as mathematical objects in their own right and their properties defined and studied.

Until the 1820s, various minor French mathematicians pursued these new algebras, in a variety of wild but suggestive mathematical experiments; other theories then took precedence. However, when English mathematics began to wake up with the reforms of the 1810s and 1820s at the University of Cambridge, research in these two algebras became an intense preoccupation among pure mathematicians. In addition, the emphasis placed in those reforms on logic led to new English interest in the topic (interestingly different from the French "logique" - semiotics to us today - which informed the French algebraists). Into these two streams of thought stepped a young genius, who surpassed all in the quality and range of his contributions - George Boole (1815-64).

Desmond MacHale's new biography of Boole would have benefited from rather more detailed discussion of this background, for as it stands his story makes Boole seem more isolated intellectually than was the case. MacHale even attributes to Boole certain achievements which in fact were provided by others. His account of Boole's life and work in itself, however, is exceedingly able, unfailingly interesting and insightful, richly endowed with hitherto unknown information, well illustrated with many portraits and photographs, and rounded off with a full bibliography of Boole's writings and a good index.

From 1849 until his death, Boole was founder professor of mathematics at the new Queen's College, Cork. As a member of the department of mathematics there (now University College, Cork), MacHale has drawn on local knowledge of sources to provide a vivid picture of Boole's activities as professor and academic. But he has also travelled to Lincoln to find new material on the early years of Boole in his native town, proprietor of his own school from 1834 until the call to Cork came 15 years later; and to London, to use the manuscripts conserved by the Royal Society. Boole's early activities are of exceptional importance for his later work, since his researches in logic bore upon, and were influenced by, his educational theory. For Boole's Boolean algebra was a form of mathematical psychology.

Although for some reason MacHale endorses Bertrand Russell's mistaken appraisal of Boole's theory as "pure mathematics", it is clear even from the titles of his main works in this field that Boole saw his work as a "mathematical analysis of logic", mathematics applied to "the laws of thought". Construct a universe of thought 1, and divide it into complementary parts x and $1-x$; the process of reasoning could be represented in an algebra based on two particular principles obeyed also by differential operators (and certain types of mathematical function) and also on a third principle special to logic: $x(1-x)=0$, or $x \vee x^2 = x$. Further, the theory was informed philosophically by his claim that the mind can perceive the general from the particular, a view which already guided the rather rigid forms of education in his own schools; and overall, he was driven by a religious impulse: the universe, he imagined, was the unity of Christian communism as expressed by Frederick Denison Maurice, whose portrait lay by his bedside as he lay dying.

All this is skilfully brought out by MacHale; and as a bonus, in the final chapter, he describes the career of Boole's wife Mary (educational psychologist, psychological researcher), their five remarkable daughters (including a mathematician, a chemist, a novelist) and their progeny, who made their names in the world. Thus did Hinton among them number. Thus did thought found a little dynasty for a few generations. MacHale has had a splendid tale to tell, and by and large has met the challenge exceedingly well; his book deserves to become widely read.

Ivor Gratton-Guinness

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Religious rationalist

William Whiston: honest Newtonian
by James E. Force
Cambridge University Press, £25.00
ISBN 0 521 26590 8

For some centuries the word "Newtonian" has signified a method and content of physical science stemming from the *Principia*, *Opticks* and other writings of Isaac Newton. Recently, however, some young American scholars have used "Newtonian" to denote ideas and principles which they detect in those non-scientific notes and drafts which Newton suppressed in his lifetime, many of which have been first read only in this century. The Newtonianism of science belongs emphatically to the continuing current of history; the Newtonianism of ancient history, religion, mythology and alchemy looks very different. For the most part, such historical currency is largely of interest to Newton's biographers. It is with this latter

part because openly avowing what Newton himself concealed - that Mr Force is concerned.

Two works of the latter kind - *The Chronology of Ancient Kingdoms Amended* (1728) and *Observations upon the Prophecies of Daniel and the Apocalypse of St John* (1733) - were finished soon after Newton's death. How much his few intimates knew of his non-scientific writings during his lifetime is obscure; Whiston claimed - but only after Newton's death - more familiarity with them and inspiration from them than anyone else. That Newton was an Arian in religion and a Whig in politics like his younger colleague (his long been clear, as also that (in Frank Manuel's words): "Where Newton was covert, Whiston shrieked in the market-place." True also that before Whiston had become notorious Newton had made him his deputy (then successor) in the chair of mathematics at the University of Cambridge. Newton's patronage hardly entails the conclusion that Newton shared Whiston's subsequently published opinions, and we have only Whiston's word for it that when Newton disavowed him it was for fear of his outspoken tongue. It might have

maker, a weaver of absurd fancies, and a butt of Augustan letters. The core of Mr Force's thesis is best expressed in his own words:

"the providentialist view of a king's election and the right to revolution constitutes the specifically Newtonian contribution to the Whig-Tory conflict in the first decades of the eighteenth century. The Newtonian universe does indeed reveal a providential father in heaven. His providential hand is revealed in the political history of the Jewish people through Newtonian biblical interpretation. God rules on earth in the same providential way he rules in heaven, and this fact legitimizes the Glorious Revolution."

Here the Alice B. Toklas to Mr Force's Gertrude Stein is Dr Margaret C. Jacob: they are good friends but cannot see eye to eye. The attempt to make Newton a founding father of 18th-century Whiggery is, however, based on tenuous inference, as Geoffrey Holmes has pointed out. In political and religious philosophy, one might credit Newton with about one-tenth of the influence of the average

Mr Force has no truck with Whiston as a Newtonian scientist and misses the curious point in the *Principia* slightly bearing upon Whiston's hypothesis that a comet's tail, Newton hinted from a water's tail, comets might really be the Earth. Mr Force also joins Leibniz in forcing Newton into a corner from which Samuel Clarke endeavoured to find an escape:

"When Newton and Whiston declare that the utility of gravity is a miraculous effect of God, they mean that in obeying natural laws physical objects continually exhibit signs of God's special providence."

Newton consistently denied that providence and gravity were miracles. This is a short book but a long read. Perhaps it rescues the eccentric Whiston from oblivion. If he is worth the effort, it is not eased by the use of such words as "veridicity", "pridefulness" and "sanitize".

A. Rupert Hall

A. Rupert Hall is emeritus professor of the history of science and tech-

BOOKS

Common sense

Science for Social Scientists
by John Law and Peter Lodge
Macmillan, £20.00 and £7.95
ISBN 0333 35100 2 and 35101 0

The term "social science" is now widely considered a misnomer; the Social Science Research Council is no more, its title abandoned in response to rational criticism. But many erstwhile "social scientists" retain the conviction that their field was in fact well-named, and that their proper business is indeed the scientific study of society. They continue to recognize the achievements of the natural sciences and to accept them as models for their own activities. This is why formal philosophical accounts of scientific method and scientific inference are still so prominent in courses in the "philosophy of the social sciences" and why such courses are regarded as indispensable in the undergraduate "social science" curriculum.

Law and Lodge are sociologists who continue to speak explicitly of social science, who see no basic distinction between social and natural science, and who accept that an understanding of the basic characteristics of natural science is invaluable within their own field. But they argue strongly that such an understanding is not provided by

Pile driving

Piling Engineering
by W. G. K. Fleming, A. J. Weltman,
M. F. Randolph and W. K. Richardson
Surrey University Press
Blackie, £35.00
ISBN 0903384 35 3

Piles are frequently the most heavily loaded parts of a structure, not only in that they have to carry the weight of the structure, but also the loads imposed on it, whether they be from the use of the structure or from nature, such as winds and waves. Consequently, there is always an element of uncertainty in the accurate assessment of such loads. Nevertheless, in contrast to the remainder of the structure - which is made up entirely of man-made elements whose properties are generally well known - piles must rely on the ground for their support.

Because they are naturally occurring, soil and rock are seldom homogeneous and are frequently given to unexpected variations as a result of the depositional processes by which they were formed. Furthermore, practical and physical constraints largely restrict examination of the ground to sampling and testing of the soil in a limited number of exploratory holes only 150 millimetres in diameter. Such is the background against which the pile designer and contractor must operate. Consequently, the appearance of this comprehensive book on piling will be much appreciated by both structural and civil engineers.

Although piling is little more than driving a stake into the ground - a technique first practised by the Greeks in the fourth century BC - or boring a hole and filling it up with concrete, such are the complexities of pile design and construction that it must be very difficult to know where to begin. Certainly a brief history of piling whets the reader's appetite, but to discuss the investigation for piling before considering the different types of piling. In general, this is extremely well covered, but it is strange that, although continuous flight auger piles have recently become popular (as the text about three-quarters of a page. At the same time, as a subsequent chapter discusses retaining walls, it would have been helpful to present the capacity of piles relies inherent in the strength of the ground. But as the problems of investigating this are

idealized philosophical accounts of science, social scientists should have the courage to recognize the "redundancy of philosophy" and seek instead to understand scientific procedures by means of empirical study. In *Science for Social Scientists* they offer a "matter-of-fact, empirical and down-to-earth" description of natural science. Epistemology, ontology and logic move into the background and inspiration derives instead from psychology, from history, and from sociology itself. The question of what scientists ought to do gives way to that of what they typically do. How do scientists actually perceive and process observations? How do they classify? How do they actually infer from the past to the future? And how do they do all these things collectively and uniformly as coherent social groups? In answering these questions Law and Lodge present science as analogous to common-sense thought and activity; its pragmatic success in predicting and manipulating aspects of the real world is acknowledged, indeed emphasized, but it is denied any special status either as representation of reality or as an embodiment of rational method.

Law and Lodge are perhaps overly critical of philosophers and their abstract and formal approach to science. They themselves draw heavily on the work of the inductivist philosopher Mary Hesse, and more than a little on Peter Winch and Ludwig Wittgenstein: philosophy itself, at times, can be "empirical and down-to-earth". Their text deserves commendation none the less as a most interesting account of scientific practice and procedure, and one particularly well designed to meet the needs of its intended audience. For teaching purposes it stands as a viable and worthy alternative to even the best of the more

familiar philosophically-oriented introductory accounts of science.

Needless to say, there are many alternative matter-of-fact descriptions of science, just as there are many alternative philosophical idealizations of it. One may wonder whether or not to advocate Law and Lodge's description of science, just as one may wonder whether or not to advocate Karl Popper's philosophy of science, or Imre Lakatos's, or Carl Gustav Hempel's, or Hilary Putnam's. Law and Lodge's description is indeed every bit as controversial as any of these conflicting philosophical accounts, and few teachers will be inclined to accept it lock stock and barrel. Their book, however, is written in such a way that its value as a teaching tool may transcend the merits of its central claims and assertions. The entire text is thick with examples and concrete illustrations, many of them extremely simple; and most of the book's conclusions are worked out through detailed consideration of these examples. Those conclusions are, moreover, systematically recapitulated at the end of each chapter as a numbered series of brief explicit theses. Thus, it is very easy for the teacher and his students to enter into a kind of dialogue with the book, calling each thesis into question, relating it to particular cases, setting out the pros and cons, evaluating it against alternative theses. Even an appraisal which resulted in the rejection of most of its theses could be a valuable educational experience.

Barry Barnes

Barry Barnes is reader in the Science Studies Unit at the University of Edinburgh.

and the need for testing are very salutary for both the inexperienced and the experienced. In this context the use of integrity testing to access whether each pile has been formed satisfactorily, is becoming increasingly prominent, as it is considerably cheaper than load testing a limited number of random piles. Although the authors describe different testing methods and suggest that their wide diversity makes selection difficult, they consider that there is no method currently available which can be confidently relied upon to identify defects in the pile by vibratory techniques from ground level.

Of all the chapters, that on retaining walls seems slightly out of place, particularly in the absence of any significant material on piling for the complex subject of offshore oil-related structures. The book is well laid out, with a comprehensive list of contents and index, and is amply illustrated with both diagrams and photographs. I can recommend it to all who specify, design or construct piles.

Andrew Lord

Andrew Lord is a consultant engineer with Ove, Arup & Partners, London.

A collection of essays chosen by Martin Gardner has been published, with an introduction, as *The Sacred Beetle, and other great essays in science* by Oxford University Press at £4.95.

Spectral forms

Structure and Spectra of Molecules
by W. G. Richards and P. R. Scott
Wiley, £14.75 and £6.95
ISBN 0 471 90377 1 and 90379 8
Spectral Problems in Organic Chemistry

by R. Davis and C. H. J. Wells
International Textbook Company
Blackie, £5.00
ISBN 0707020289

Molecular spectroscopy is covered in at least a dozen different undergraduate textbooks of varying complexity, reflecting to some extent the importance of a subject which pervades the whole of chemistry. On the one hand, every organic chemist who attempts to produce a new substance, or modify an old one, will have recourse to spectroscopic techniques, as they tell him much about the constitution of his test-tube sludge at the bottom of his flask and of the way the parts are joined together. On the other, a beam of radiation passed through a tube con-

taining a simple diatomic molecule can tell the physical chemist with great precision how far apart the atoms are. Spectroscopy and structure, therefore, are inextricably linked.

In their preface, Richards and Scott claim not to have written just "another" book, their aim being to combine the study of spectroscopy with applications to molecular structure determination. As their book deals with the standard spectroscopic regions from radio-frequencies to the ultraviolet, and includes chapters on chemical structure and bonding, all in some 170 pages, the authors' own description of it as "condensed" is, at best, conservative. Certainly, the untutored student seeking detailed explanations will finish with many unanswered questions, although some of these are a brief summary of techniques and applications, perhaps for general revision, might find satisfaction.

The first four chapters (some 50 pages) are devoted to introductory material on quantization and energy levels, together with a brief discussion of chemical bonding and the molecular orbital descriptions of some simple molecules and transition metal complexes. The next three chapters (40 pages) deal, very traditionally, with the microwave, infrared and ultra-

AI map

Introduction to Artificial Intelligence
by Eugene Charniak and
Drew McDermott
Addison-Wesley, £15.95
ISBN 0201 11946 3

The start of artificial intelligence (AI) as a subject in its own right could be dated to a conference in Dartmouth, New Hampshire, in 1956, which debated the idea that any feature of intelligence could be described so precisely that it could be simulated on a computer. Although that conference accomplished little, the subject has grown steadily. In Britain it has recently been given a tremendous short-term boost by the Alvey programme, mainly because of commercial and military interest in exploiting some very useful results and by-products of AI research. Indeed, there have been very few recent theoretical advances: the vital factor in the subject's development is the recent increase in affordable computing power which has made some old ideas more economically feasible.

The number of people doing research into AI as opposed to its applications is still very small, and to them computers are only useful tools. Computers manipulate symbols; AI researchers can use them as testbeds for modelling the kinds of epistemological structures that might underlie aspects of intelligence such as vision, language, comprehension and use, reasoning, and learning. Since the machines do only what they are told, the AI researcher who tries to turn his theory into a program is forced to be precise about every detail; he can also inspect every aspect of the effects of his modelling. Although this is a great blessing, it does mean that he must be familiar not only with his specialist topic - say, language understanding - but also with such topics as methods of representing the necessary knowledge, methods of applying that knowledge,

methods of formal reasoning, and many aspects of computer science. It is not at all surprising, therefore, that progress is slow and that good introductory textbooks are hard to find. This 700-page book, by two well-known researchers, is by far the best textbook now available for undergraduate or introductory postgraduate courses. Not only does it succeed in presenting AI as a coherent body of concepts and ideas, it also describes recent work. Each chapter starts with a map of how later sections depend on earlier ones; and the book's preface describes the various threads running throughout the book, so that readers can select their path through the material.

The core consists of excellent accounts of the basic ideas of representation and reasoning and search, with more specialized material about low-level vision, reasoning under uncertainty (including the best-known expert systems), language understanding, planning and learning. Many sections, such as those on temporal reasoning in planning, describe recent work not otherwise available in textbook form. There is also a very good introduction to the main AI programming language LISP - essentially Franz LISP, but confined to a subset that should suit users of other versions of LISP.

Lecturers and students acquainted with other AI languages, however, should not spurn the book on this account. All the chapters contain algorithm descriptions in a LISP-like syntax that should make it fairly easy to implement them in any other decent AI language, as well as substantial sets of exercises (without answers) and extensive references to accessible material. So many other textbooks are content to refer you to classic but unobtainable technical reports from AI laboratories.

The style of writing and the touches of humour combine to make this one of the most pleasant textbooks, in any subject, that I have read.

Peter Ross

Peter Ross is lecturer in artificial intelligence at the University of Edinburgh.



Thirteenth-century manuscript depicting the threshing of corn, from Jean Chapelot and Robert Fossier's *The Village and House in the Middle Ages* (Batsford, £19.95).

on molecular spectra - integrated almost exclusively by being placed between the same covers. Indeed, chapters on structure contain virtually no references to spectra; and those on spectroscopy contain no more references to molecular structure than do other spectroscopy texts at a similar level. Each half-book inevitably skims the surface of its topic.

Spectral Problems in Organic Chemistry is a very satisfactory collection of graded spectroscopic problems, reproducing for each of 56 compounds the infrared, hydrogen and carbon nuclear magnetic resonance, and mass spectra; sufficiently comprehensive tables of spectroscopic data are collected to cover the techniques involved; and solutions to the problems are given by reference to various easily available chemical directories.

An interested student working through these problems will learn a great deal about spectra-structure correlation; and he or she may well enjoy it. Richards and Scott refer rather disparagingly to this process as "a game": shouldn't learning be fun?

C. N. Banwell

C. N. Banwell is sub-dean of the school of chemistry and molecular sciences at the University of Sussex.

Appointments

obtained from the Master Secretary, Gonville and Caius College, Cambridge CB2 1PQ. Applications for the bursarships must be received by 15 October 1985. (51644)

Overseas

Post Overseas

This post is funded under Britain's Aid Programme to developing countries

Bangladesh

Senior Technical Adviser
Bangladesh Technical Education Project
Technical Teacher Training College (TTTC)
Dhaka

Duties: to lead a team of British subject specialists in helping set up a new Technical Teacher Training College which is to provide pre-service and in-service courses for staff of Polytechnics and Engineering Colleges in Bangladesh; to liaise with the Chief Technical Adviser, the Project Co-ordinator and the Director of Technical Education on implementation of the World Bank technical teacher training programme; to advise the Technical Education Board and assist with the development of the curriculum examinations and methods of evaluation; to assist with general development of college administration and finance in collaboration with the Director TTY; to help with the selection of equipment and advise on the training of staff in the UK; to teach on appropriate teacher training courses in specialist subject areas.

Special Qualifications: male candidates, preferably aged 45-55, should have a degree-level qualification in Engineering and an advanced level qualification in Technical Teacher Education. Considerable experience of all aspects of Technical Teacher Training at a senior level in the UK and overseas is essential.

Salary: £10,300-£22,468 per annum.

Overseas Allowances: nil-£1,544 depending on salary and marital status.

Benefits: salary free of UK income tax; free family passages; children's education allowances and holiday visits; free furnished accommodation; employer's contribution to a recognised superannuation scheme or an allowance of 11 per cent of salary in lieu.

Contract: for three years with the British Council.

Closing date for applications: 13 September 1985.

Reference: 85 K 51 TH

For further details and an application form, please write, quoting the post reference number for Overseas Educational Appointments Department, The British Council, 90-91 Tottenham Court Road, London W1P 0DT.

The British Council

Colleges and Institutes of Higher Education



**WEST GLAMORGAN
INSTITUTE OF
HIGHER EDUCATION
SWANSEA**

Applications are invited for the following academic vacancies:-

Dean of Faculty of Construction (Burnham HOD 1V)

Candidates should be graduates and/or professionally qualified in an academic discipline associated with Construction and should have experience of both teaching and the industry. The Faculty offers a range of courses extending from craft to undergraduate and professional levels. A knowledge of BTEC procedures and familiarity with the CITEB are essential.

Dean of Computing Services (Burnham HOD 1V)

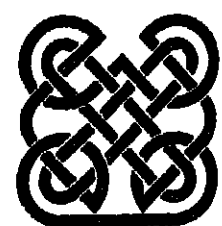
Applicants should be highly qualified in Computer Studies and have had educational, commercial and industrial experience. The successful applicant will have the responsibility for the operation of the central computer service as well as a co-ordinating and advisory role across the Institute. The Institute is seeking a person with leadership potential to develop the range of services necessary as information technology extends across the range of courses within the Institute. A commitment to educational research and consultancy is essential. The possession of a higher degree would be an advantage.

Salary Scale: Burnham Head of Department IV - £14,799 - £16,676 (under review).

For further details and application form please write enclosing a stamped addressed envelope to: The Principal, WEST GLAMORGAN INSTITUTE OF HIGHER EDUCATION, Townhill Road, Swansea, SA2 0UT.

Closing date: 20th September 1985

(20202)



WEST GLAMORGAN INSTITUTE OF HIGHER EDUCATION SWANSEA

Applications are invited for the following academic vacancies:-

FACULTY OF ART & DESIGN

Lecturer I History of Design

Candidates should be graduates specialising in the History of Art and Design. The person appointed will contribute to HND programmes in Architectural Stained Glass, Ceramics, Photography and Technical Illustration. Teaching experience would be an advantage. An interest in research and familiarity with BTEC standards would be beneficial.

Lecturer I Three Dimensional Design

Applicants should be well qualified Artists/Designers with an imaginative approach capable of introducing all aspects of three dimensional design into a range of BTEC courses. The successful applicant should specialise in ceramics and be capable of contributing to other areas associated with three dimensional design.

FACULTY OF BUSINESS ADMINISTRATION

Senior Lecturer in Economics

Applicants should be well qualified and able to teach economics on degree and professional courses. The possession of a higher degree and an interest in research and consultancy would be an advantage. Candidates should have industrial/academic experience and an understanding of CMAA and BTEC regulations would be beneficial.

Senior Lecturer in Business Studies

Candidates should be graduates in Business Studies specialising in one or more of the following fields:- Marketing, Tourism, Recreation or European Studies. An understanding of the impact of Information Technology on business practices would be beneficial. The person appointed will teach on a range of courses within the Faculty and contribute to the development of a research and consultancy programme.

Senior Lecturer in Accountancy

A Senior Lecturer in Accountancy is required able to teach either economics or law as a second discipline. Experience in the application of IT and computerized business systems would be an advantage. The successful applicant will teach financial accountancy to a range of degree and professional courses. An understanding of BTEC and CMAA procedures would be advantageous.

FACULTY OF ELECTRONIC ENGINEERING

Head of School of Electronics (Principal Lecturer)

Applicants should be graduates who possess a higher degree in Electrical Engineering or Electronics. The successful candidate should have a good industrial background and teaching experience within higher education. Knowledge of BTEC and CMAA would be particularly useful as well as an understanding of the MSC. An interest in research would be a necessary feature of the person appointed.

Senior Lecturer in Microelectronics

Candidates should be graduates specialising in Electronics and Micro-electronic Systems. The possession of a higher degree would be an advantage. The successful applicant should have industrial or post graduate research experience. Teaching experience and a knowledge of CMAA and BTEC would be beneficial.

Senior Lecturer in Communication Engineering

Applicants should possess a higher qualification and be able to contribute to the teaching of Telecommunications; Digital Data Transmission; Satellite Communications and Computer Technology. Experience of teaching in higher education would be an advantage as well as a research background. The successful candidate will be expected to contribute to the development of a B.Eng. degree.

FACULTY OF INFORMATION STUDIES

Lecturer I Mathematics

Applicants should be well-qualified graduates in Mathematics. The successful candidate will be responsible for the teaching of Mathematics across a range of courses including degree programmes. A knowledge of BTEC regulations and teaching experience would be an advantage. The possession of a higher degree and an interest in research is desirable.

Senior Lecturer in Systems Analysis and IKBS

Applicants should be well qualified graduates with appropriate industrial or commercial experience. Candidates should be able to offer Systems Analysis; and an understanding of IKBS is particularly important. A higher degree and an interest in research would be an advantage. Teaching duties will include BA (Honours) Business Studies, and HND courses.

Senior Lecturer in Occupational Psychology

Applicants are invited from specialists able to offer one or more of the following fields:- Occupational/Industrial Psychology, Ergonomics or Organizational Behaviour. Candidates should be graduates and the possession of a higher degree would be an advantage. Applicants should possess appropriate commercial or industrial experience and a research background would be advantageous. Teaching duties will include BA (Hons) Business Studies, and HND Courses.

FACULTY OF TECHNOLOGY

Head of School of Computer Aided Engineering (Principal Lecturer)

Applicants are invited from well-qualified graduates who possess good industrial experience in one of the following:- Control applied to Mechanical Manufacturing Systems; CAD; Manufacturing including CAM and Robotics. The successful applicant should have an interest in research/consultancy and teaching experience would be an advantage. The person appointed will be responsible for developing CAE courses and establishing a FMS facility.

Senior Lecturer in Fabrication and Welding

Candidates should be graduates, preferably with post-graduate qualifications in Welding Technology. The successful candidate will contribute to the recently approved HND in Fabrication and Welding Engineering and other HND courses. Previous teaching experience and a research/consultancy background would be an advantage.

Senior Lecturer in Manufacturing Engineering

This permanent post is funded under the Welsh Office for Information Technology. Applications are invited for this important post. Candidates should be graduate Engineers experienced in Design and Manufacturing, with an interest in CAM, FMS, Robotics and Automation. Recent industrial experience would be an advantage.

Research in Manufacturing Systems (Two Year Fixed Term Appointments)

The post is funded under the Welsh Office Initiative for 'Information Technology'. Applications are invited from recent graduates in Mechanical or Production Engineering with a specific interest in Integrated Manufacturing Systems. The successful applicant will be expected to register for a research degree.

SALARY SCALE	
Principal Lecturer	£13,085 - £14,580 Bar-£16,487 (under review)
Senior Lecturer	£11,175 - £14,186 Bar-£12,098 (under review)
Lecturer I	£8,910 - £10,176 (under review)
Research Associate	£8,181 - £7,176 (under review)

For further details and application form please write enclosing a stamped addressed envelope to:-

The Principal
West Glamorgan Institute of Higher Education
Townhill Road, Swansea SA2 0UT

Overseas



NATIONAL UNIVERSITY OF SINGAPORE FACULTY OF LAW

Applications are invited for teaching appointments in the Faculty of Law.

Candidates must possess at least a Master's degree in Law or equivalent and relevant teaching/research experience. Preference will be given to candidates who are able to teach in one or more of the following areas:

Banking Law	Agency & Partnership
Company Law	Equity & Trusts
Conflict of Laws	Evidence
Constitutional Law	Legal Method & Process
Contract Law	Remedies
Criminal Law	Restitution
Land Law	Shipping
Revenue Law	Torts

Gross annual emoluments range as follows:

Lecturer	\$830,660 - \$3,570
Senior Lecturer	\$557,590 - \$1,930
Associate Professor	\$589,300 - \$23,000

(STGE1 = \$2.94 approximately)

The commencing salary will depend on the candidate's qualifications, experience and the level of appointment offered.

Leave and medical benefits are provided. Under the University's Academic Staff Provident Fund Scheme, the staff member and the University are each required to contribute at the present rate of 25% of his salary, the contribution of the staff member and the University being subject to a maximum of \$1,500 per month and \$1,750 per month respectively. The sum standing to the staff member's credit in the Fund is tax-free and may be withdrawn when the staff member leaves Singapore/Malaysia permanently.

Depending on the type of contract offered, other benefits may include: a settling-in allowance of \$1,000 (single) or \$2,000 (married); subsidised housing at nominal rentals ranging from \$100 to \$218 p.m.; education allowance for up to three children, subject to a maximum of \$10,000 per annum per child; passage assistance and baggage allowance for the transportation of personal effects to Singapore. Staff members may undertake consultation work, subject to the approval of the University, and retain consultation fees up to a maximum of 60% of their gross annual emoluments in any one year.

Applications forms and further information on terms and conditions of service may be obtained from:

The Director Personnel Department National University of Singapore Kent Ridge Singapore 0511	NUS Overseas Office c/o Singapore High Commission in London 5 Chesham Street London SW1 U.K. Tel: (01) 235 4562
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(20241)

Republic of Singapore College of Physical Education Lecturers

The College of Physical Education is the only tertiary institution in Singapore engaged in specialist teacher training for physical education. It is an autonomous body responsible to The Institute of Education Council.

The College is inviting applications from suitable qualified and experienced candidates for two Lectureship positions in the following areas: Biological Bases, Exercise Physiology, Biomechanics, Psychological and Sociological Aspects, Curriculum Development and Teaching Method.

The ability of candidates to contribute to the teaching of a variety of practical activities, some at an advanced level is also highly desirable.

General Requirements:

1. Applicant should hold a Master's degree and/or have a specialist qualification.
2. In addition to the above, applicants should hold teaching diplomas or certificates and have at least 3 years' approved teaching or related teaching experience and experience in teacher education is desirable.

Remuneration:

Appropriate salary ranges, including National Wage Council (NWC) increases and housing allowance are as follows:

Single Officer:	\$ 542,378 p.a. - \$ 586,563 p.a.
Officer accompanied by spouse or children:	\$ 545,978 p.a. - \$ 590,163 p.a.
Officer accompanied by spouse and children:	\$ 549,578 p.a. - \$ 593,763 p.a.

Other Benefits:

Other benefits applicable to the Lectureship position include loan scheme for the purchase of cars, medical benefits, children's education allowance and ex-gratia payment where applicable, and a monthly contribution by the College of 25% of the officer's monthly salary plus education allowance towards The Central Provident Fund, subject to a maximum of \$ 31,750 per month. The Officer will also have to contribute 25% of his salary plus education allowance towards The Central Provident Fund, subject to a ceiling of \$ 31,250 per month. (The rates of contribution to The Central Provident Fund are subject to revision periodically.)

Applicants should submit a full curriculum vitae with qualifications, experience, personal details and the names of 3 referees together with their letter of application to Mr Alan Guy, Department of P.E. and Sports Science, Loughborough University of Technology, Loughborough, Leicestershire LE11 3TU.

Closing date for application: 5 September 1985

(20241)



Western Australian
Institute of Technology

Tenured Appointment School of Mathematics and Computing Professorial Level Position COMPUTING SCIENCE Salary \$54,948 (Aust)

The appointee to this new senior position will provide vital, effective leadership, both academic and professional, in Computing Science within the School of Mathematics and Computing which incorporates the Department of Computing Science and the Department of Mathematics and Statistics. The appointee may take up the position of Head of Department of Computing Science. The Department offers a degree and two post-graduate courses in Computing. A Master's degree programme is scheduled to commence in 1986.

With the expectation of increased involvement in major applied research initiatives with industry, research organisations and the developing Western Australian Technology Park, the appointee will be required to provide leadership in the maintenance and development of research programmes and industrial consultancy while providing course development and teaching in areas of expertise. The appointee will have a strong academic background with a record of scholarly achievement and research in computing sciences, experience in group leadership and project management and a commitment to the development of programmes which excel in both teaching and research. An appointee with appropriate academic qualifications and record can be granted the title of Professor.

Computing facilities within the School include a VAX785, 4 PDP11's (UNIX), graphics workstations and four terminal/micro/graphics laboratories as well as access to the Institute's VAX8600's.

Conditions include terms for appointee and family plus assistance with removal expenses, superannuation.

Applications: Details, including names and addresses of three referees should be submitted not later than 30 September 1985 to the Appointments Officer, Western Australian Institute of Technology, Kent Street, Bentley, Western Australia, 6102. A brochure containing further information may be obtained by Tel: (08) 9363 or Cable (WAINTCH) citing 'Appointments', position reference number and your return address.

When applying please quote Ref 815 HES.



Western Australian
Institute of Technology

Tenured Senior Lecturer EDUCATIONAL TECHNOLOGY (Including Educational Computing)

Provide academic leadership in the undergraduate and postgraduate programmes in educational technology and educational computing conducted by the Faculty of Education.

The focus of the postgraduate programmes, including the Master of Education, is on instructional design and the development and evaluation of materials and systems using communications and information technologies. Candidates should have an active research interest in one or more of these areas and experience as a designer of instructional materials, training programmes, computer software and/or a variety of audio visual media.

Salary range: \$35,203 - \$41,029 (Aust).

Conditions include terms for appointee and family plus assistance with removal expenses, superannuation.

Applications: Details, including names and addresses of three referees should be submitted not later than 31 October 1985 to the Appointments Officer, Western Australian Institute of Technology, Kent Street, Bentley, Western Australia, 6102. A brochure containing further information may be obtained by Tel: (08) 9363 or Cable (WAINTCH) citing 'Appointments', position reference number and your return address.

When applying please quote Ref B12 and Code HES.

REMINDER

Copy for
Classified
Advertisements
in the
T.E.S.
should arrive
not later than
4 p.m. Monday
preceding
publication

University of Cape Town LECTURER IN POLITICAL STUDIES

Applications are invited for the above post, for appointment on 1st January 1986 or as soon as possible thereafter.

The successful applicant will be expected to undertake teaching in one or more branches of political studies, with an emphasis on international relations.

Salary range: R17,267 - R28,818 p.a. annum, with an annual bonus and attractive staff benefits.

Applicants should submit a full curriculum vitae and the names and addresses of three referees not later than 31 October 1985 to the Registrar, University of Cape Town, Private Bag, Rondebosch, 7700, South Africa. Further information may be obtained from the Registrar or The Secretary, SA Universities Office, Chichester House, 21 High Holborn, London WC1V 7HE.

The University's policy is not to discriminate on the grounds of sex, race or religion. Further information on the implementation of this policy is obtainable on request. (31456) H74

UNIVERSITY OF QUEENSLAND

CHAIR OF PSYCHOLOGY

Applications are invited from distinguished scholars in any area of psychology (experimental, clinical and applied psychology) are not covered by current Chairs. Applicants must have a substantial research record, and demonstrated skills in the supervision of research students.

Salary: \$ A54,948 per annum

The University provides prescribed travelling and removal expenses, superannuation, housing assistance and special studies programs.

Closing date: 1st October, 1985. Reference No. 33885

Additional information and application forms are available from the Secretary-General, Association of Commonwealth Universities, 36 Gordon Square, London WC1H 0PF. The University of Queensland is an Equal Opportunity Employer.

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The Times Higher Education Supplement

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